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AWARD OF THE BICENTENARY MEDAL FOR 1961

The Council has awarded the Bicentenary Medal for 1961 to Miss Audrey Withers, O.B.E. This medal is awarded annually to a person who, in a manner other than as an industrial designer, has exerted an exceptional influence in promoting art and design in British industry.

For twenty years, until her retirement last December, Miss Withers was editor of *Vogue* magazine. During that time she not only made outstanding contributions to the presentation of fashion news and ideas but was influential in raising standards of design in the fashion industry itself. From 1948 to 1953 she was a Member of the Council of Industrial Design, and in the latter year was appointed O.B.E. in recognition of her work as Chairman of the Coronation Souvenir Committee. She has been a Fellow of the Society since 1953, and for four years served on the Women's Fashion Section Jury of the Industrial Art Bursaries Competition, of which she has recently become Chairman. Miss Withers was elected a Member of the Society's Council at the Annual General Meeting.

ELECTION OF CHAIRMAN OF COUNCIL

At the meeting of Council on Monday, 10th July, The Rt. Honble. Lord Nathan, P.C., T.D., F.B.A., F.S.A., was unanimously elected Chairman of Council for the year 1961-62.

ROYAL DESIGNERS FOR INDUSTRY

On the recommendation of the Joint Committee of the Royal Society of Arts and the Faculty of Royal Designers for Industry, the Council has made the following new appointments to the distinction of R.D.I.:

Stefan Buzas, F.S.I.A. (Exhibitions and Interior Design)

Jack Howe, F.R.I.B.A., F.S.I.A. (Engineering Products and Industrial Equipment)

and the following appointment to the distinction of Honorary R.D.I.:

Marcello Nizzoli (Italy) (Typewriters and Calculating Machines)

Mr. Buzas' work as an exhibition and interior designer is characterized by elegance, precision and individual colour sense. He was largely responsible for one of the most outstanding post-war shop designs, that of the South African Travel Bureau in Piccadilly, and also for the design of the weather window of the 'Time and Life' Building in Bond Street. His feeling for materials was well demonstrated in the display which he organized for the Council of Industrial Design at the Furniture Exhibition of 1960. A naturalized British subject, Mr. Buzas is at present a partner in the architectural firm of James Cubitt & Partners.

In recent years Mr. Howe has played an important part in various aspects of railway modernization. As consultant to the British Transport Commission he has been closely concerned with the design of rolling stock, railway station lighting and equipment and railway furniture. He has also designed street furniture for the London Transport Executive and the G.P.O., and through major commissions undertaken for a number of leading manufacturers has influenced the appearance and quality of a wide range of engineering and electrical instruments and fittings.

Mr. Nizzoli's designs for the Olivetti Company's typewriters and calculating machines have been admired in every country where these products are sold. One of the best known, the 'Lexicon 80' typewriter, is on permanent exhibition at the Museum of Modern Art, New York. In 1954 Mr. Nizzoli won the 'Compasso d'Oro' award for industrial design with his portable 'Lettera 22'.

INDUSTRIAL ART BURSARIES COMPETITION 1961

Full particulars of the Competition to be held in the autumn of 1961 have now been published. The following sections will be included, and, except where otherwise stated, one Bursary of £150 will be offered in each:

ADVERTISING DESIGN (THREE BURSARIES, ONE OF £200, ONE OF £175, AND ONE OF £150)	FLAT GLASS DECORATION
CARPETS (TWO BURSARIES, ONE OF £150 AND ONE OF £100)	FURNISHING TEXTILES
DOMESTIC ELECTRICAL APPLIANCES	FURNITURE (SIX BURSARIES)
DOMESTIC GAS APPLIANCES	LAMINATED PLASTICS
DOMESTIC SOLID-FUEL-BURNING APPLIANCES	PACKAGING
DRESS TEXTILES (FOUR BURSARIES: THREE OF £150 AND ONE OF £50)	PLASTIC CONSUMER GOODS (TWO BURSARIES, ONE OF £150 AND ONE OF £50)
ELECTRIC-LIGHT FITTINGS (TWO BURSARIES)	POTTERY (TWO BURSARIES)
EXHIBITION DISPLAY	TYPOGRAPHY
FILM, STAGE AND TELEVISION SETTINGS (FIVE BURSARIES)	WALL-PAPER
	WOMEN'S FASHION WEAR (TWO TALFO AWARDS OF £200 AND £150 RESPECTIVELY, AND ONE BURSARY, OF £150, FOR FASHION FOOTWEAR)

In addition to the above Bursaries, the Council of the Society may provide supplementary awards from the Art Congress Studentship Trust Fund and from the Owen Jones Memorial Trust Fund. A George M. Whiley Bursary, of £150 in value, is also offered to a candidate in any section of the Competition. Associate Membership of the Society will, subject to certain conditions, also be offered to successful candidates.

The Sir Frank Warner Memorial Medal will be awarded to the candidate submitting the best design in the Set Test in either the Furnishing Textiles, Dress Textiles or Carpets section of the Competition, if this design is considered to be of sufficient merit. The medal may be awarded to a successful candidate in addition to a Bursary.

The last day for the receipt of entry forms is 9th October, 1961. A copy of the brochure containing all particulars of the Competition may be obtained from Mr. I. Jacobs, the Bursaries Officer.

THE SOCIETY'S CHRISTMAS CARD

As announced in the last issue of the *Journal*, the Christmas card for 1961 has been designed by Mr. Edward Bawden, C.B.E., R.A., R.D.I., and its subject is the International Exhibition of 1862, with which the Society was closely concerned.

A reproduction of Mr. Bawden's design is included on the order form at the back of this issue of the *Journal*.

MEETING OF COUNCIL

A meeting of the Council was held on Monday, 10th July. Present: Lord Nathan (in the Chair); Lord Bossom; the Honble. G. C. H. Chubb; Lord Conesford; Mr. R. E. Dangerfield; Mr. P. A. Le Neve Foster; Mr. E. Maxwell Fry; Mr. John Gloag; Sir Ernest Goodale; Dr. Stanley Gooding; Mr. Milner Gray; Dr. R. W. Holland; Mr. J. C. Jones; Mr. Edgar Lawley; Mr. Sidney Loweth; Mr. F. A. Mercer; Mr. Oswald P. Milne; Mr. Brian O'Rorke; Sir Gilbert Rennie; Mr. A. R. N. Roberts; Sir Philip Southwell; Professor S. Tolansky; Dr. P. F. R. Venables; Mr. C. E. Vignoles; Mr. Hugh A. Warren; Sir Harold Wernher; Miss Audrey Withers, and Sir Walter Worboys; with Mr. G. E. Mercer (Deputy Secretary) and Mr. J. S. Skidmore (Assistant Secretary).

ELECTIONS

The following candidates were duly elected Fellows of the Society:

Abbott, Major Peter Edward, R.A.(retd.), Croydon, Surrey.
Adaskin, John, Toronto, Ontario, Canada.

Bagley, John Henderson, Middlesbrough, Yorkshire.
 Barrett, Arthur William, Reading, Berkshire.
 Billing, Goran, Bristol.
 Brebner, Albert, Edinburgh.
 Brining, Wilfred, F.C.A., Slough, Buckinghamshire.
 Edwards, Roy Ernest, N.D.D., Newcastle-upon-Tyne.
 Gale, Eric Leslie, M.C., F.R.I.B.A., London.
 Gordon, James Hugh, Radford Semele, Warwickshire.
 Goucher, Dennis Samuel, Birmingham.
 Guttman, Charles Henry, A.C.P., London.
 Hartnell, Roy George, A.T.C., N.D.D., Coventry.
 Hendry, John Walter, London.
 Kent, William Ronald, B.Sc., South Ruislip, Middlesex.
 Lloyd, Gabriel Frederic Garnons, London.
 Pearce, Alfred Edmund McRoy, Yeovil, Somerset.
 Preston, Lt. Adrian William, B.A., Canadian Armed Forces, Europe.
 St. Barbe Sladen, N., F.R.S.L., London.
 Shelley, Ronald Alfred, Derby.
 Stoddard, Miss Donna Melissa, B.S., M.Ed., Lakeland, Florida, U.S.A.
 Stubbs, Harry Dacre, Melbourne, Victoria, Australia.
 Too, Chee Chew, M.B.E., Kuala Lumpur, Malaya.
 Westbrook, Eric Ernest, Kew, Victoria, Australia.
 Williams, Arthur John, Southampton.
 Willkie, Mrs. Helen, B.S., Seal Harbor, Maine, U.S.A.
 Woods, Jack, Lusaka, Northern Rhodesia.

The following candidates were elected Benjamin Franklin Fellows of the Society:

Dickinson, Edwin W., New York City, U.S.A.
 Schoonmaker, E. Harold, Tenafly, New Jersey, U.S.A.

The following Companies were admitted into association with the Society:

The Colombo Commercial Company Ltd., London.
 Hoover Ltd., Greenford, Middlesex.

ELECTION OF CHAIRMAN OF COUNCIL

Lord Nathan was elected Chairman of Council for the ensuing year.

PROPOSAL FOR AN ENDOWED LECTURE ON LANDSCAPE GARDENING

It was agreed to accept an offer from Mr. John A. Chambliss, a Fellow of the Society, to endow a periodical lecture on Landscape Gardening.

EDMUND RICH MEMORIAL LECTURE

It was agreed to use part of the funds available under the terms of the Edmund Rich Memorial Trust for a biennial Juvenile Lecture.

R.D.I. DIPLOMA

It was reported that Her Majesty the Queen had graciously consented to the use of the Royal Arms on the Diplomas of the Distinction of R.D.I.

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EXAMINATION IN BUSINESS STUDIES

Approval was given to a proposal for the extension of the new examination in Business Studies (See June, 1961, *Journal*, page 489) to overseas centres.

ANY OTHER BUSINESS

A quantity of financial and other business was transacted.

207TH ANNUAL GENERAL MEETING

WEDNESDAY, 28TH JUNE, 1961

OSWALD P. MILNE, F.R.I.B.A., J.P.,

Chairman of Council of the Society, in the Chair

The 207th Annual General Meeting was held on Wednesday, 28th June, 1961, at 3 p.m. at the Society's House, in accordance with the Bye-laws, for the purpose of receiving the Council's Report and the Financial Statements for 1960, for the Election of Officers and for the Amendment of the Bye-laws.

The Deputy Secretary read the Notice convening the meeting and proved that it had been duly exhibited and published as required by the Bye-laws.

THE CHAIRMAN: Before I start upon the formal Agenda I should like to draw your attention to the fact that the Secretary, Dr. Luckhurst, who has been a familiar figure at these meetings for a good many years, is not here this afternoon. You will be sorry to hear that at about Easter time he suffered a breakdown in health, and his doctor advised him to take a prolonged rest. The Deputy Secretary, Mr. Mercer, has for the time being taken up the Secretary's work as well as his own, and the Society has been able to carry on very efficiently; but we want to see Dr. Luckhurst back soon, and I think you would wish to send him and his wife a message of sympathy.

The Minutes of the last Annual General Meeting, held on 29th June, 1960, were then taken as read, the Deputy Secretary having summarized their contents, and were signed by the Chairman as a correct record.

The Chairman then called upon the Deputy Secretary to summarize the Annual Report of the Council.

ANNUAL REPORT OF THE COUNCIL

207th SESSION, 1960-61

I. H.R.H. THE PRESIDENT

His Royal Highness the President visited the Society's House on 16th December and took luncheon with the Chairman and Members of Council. During this visit, the Duke of Edinburgh presented the Benjamin Franklin Medal for 1960 to Mr. Robert Nicholson, F.S.I.A.

The Council wish to record their great appreciation of the active interest which His Royal Highness continues to take in the affairs of the Society.

II. ALBERT MEDAL

With the approval of the President, the Albert Medal for 1961 was awarded to Professor Walter A. G. Gropius, Dr. Ing., Hon. R.D.I., 'for his contributions to architectural and industrial design'.

III. BICENTENARY MEDAL

The Bicentenary Medal for 1961 was awarded to Miss Audrey Withers, O.B.E.

IV. BENJAMIN FRANKLIN MEDAL

With the approval of the President, the Benjamin Franklin Medal for 1961 was awarded to Mr. Alick Dick, Chairman and Managing Director of Standard-Triumph International Ltd., 'for his contribution to industrial progress in the motor-car industry'.

V. R. B. BENNETT COMMONWEALTH PRIZE

With the approval of the President, the R. B. Bennett Commonwealth Prize for 1960 was awarded to Dr. E. W. R. Steacie, O.B.E., F.R.S., President of the National Research Council of Canada, 'for his contributions to the development of pure and applied science in Canada and in the Commonwealth'.

VI. AWARD FOR DOCUMENTARY FILM PRODUCTION IN THE COMMONWEALTH

The Society's first Award for Documentary Film Production in the Commonwealth, which was offered last year, was made to the Government of the Federation of Malaya as producer of the film *Master Farmer—Kum Yeng*. (Full details were given in the *Journal* for November, 1960, page 849.) The award was presented to the High Commissioner for Malaya at the Inaugural Meeting of the Session. The film itself was publicly shown at the National Film Theatre on 11th November,

and was also included in the programme of the Society's Film Evening later that month. (See also Section XIX of this Report.)

VII. AWARD FOR JOURNALISM IN THE COMMONWEALTH

Mention was briefly made in the previous Report of a suggestion that the Society should offer a new Award for Journalism in the Commonwealth. During the year a detailed proposal was ratified by the Council and nominations were invited and received from overseas. In April the award was made to Mr. Bruce Hutchison, editor of the *Victoria Daily Times*. Full details of the award were announced in the May, 1961, issue of the *Journal*. (See also Section XIX of this Report.)

VIII. ROYAL DESIGNERS FOR INDUSTRY

Two new Royal Designers for Industry were appointed during the year: Mr. Stefan Buzas, for exhibitions and interior design, and Mr. Jack Howe, for engineering products and industrial equipment. Mr. Marcello Nizzoli, the Italian designer of typewriters and calculating machinery, was appointed to the Honorary distinction.

In the year under review Professor R. Y. Goodden served as Master, assisted by Mr. Brian O'Rorke as his Deputy. Mr. O'Rorke has been elected Master for 1961-62.

A welcome number of R.D.I.s and their guests attended the tenth Annual Reception of the Faculty at the Society's House on 2nd February. Amongst the overseas visitors at the Society's own Reception in the following month was Mr. Pinin Farina, Hon.R.D.I., who was responsible for the design of the new motor cars commissioned by the President of Italy for the recent visit of Her Majesty The Queen to that country.

On 5th January at a Special Meeting of the Society the Chairman of Council presented Diplomas to Mr. Stanley Morison, Mr. Alastair Morton and Sir Basil Spence, appointed R.D.I. last July, and to the representative of Mr. Charles Eames, who had been appointed Hon.R.D.I. At this meeting the annual Oration, entitled 'Larger Than Life' was delivered by Mr. A. B. Read, a former Master.

During the past twelve months the Faculty has suffered the loss of two Members : Mr. Walter Dorwin Teague, who held the Honorary distinction, died on 5th December, and Mr. Reco Capey, who was appointed R.D.I. in 1938, died on 11th May.

Amongst other services rendered to the Society, Members of the Faculty have once again made a valuable contribution to the judging of the entries in the annual Industrial Art Bursaries Competition.

IX. ANNUAL RECEPTION

The second Annual Reception of the Society, held on 3rd March, was attended by Sir Howard Florey, President of the Royal Society, as guest-of-honour, and by

the Italian ambassador, the Lord Mayor of London, a number of other distinguished visitors and some 250 Fellows of the Society with their guests. The evening's entertainments included a small exhibition of designs by past winners of awards in the Society's Industrial Art Bursaries Competition, and two pianoforte recitals given by Mr. John Barstow. These initiated what the Council intends shall be a series of recitals, to be given at the Reception in future years by young musicians beginning their professional careers who need the encouragement provided by an engagement of this kind.

X. REGIONAL ACTIVITIES

In the last Annual Report it was stated that the Council intended to explore the possibility of arranging new activities of the Society in important regional centres in the United Kingdom, and that a successful initial meeting had already been held in Birmingham. In consequence of this meeting a Committee of local Fellows has been formed, under the Chairmanship of Dr. T. Emmerson, and a programme of activities for the Midland region has been arranged.

Following a preliminary visit by the Chairman of Council to Manchester in September, a dinner was held there in January, with encouraging results (see March, 1961, *Journal*), and a small interim committee of local Fellows, with Mr. Leslie Lever, M.P., as Chairman, is now considering a programme of functions for the North-Western region.

The experience gained during the year has enabled the Council to define more closely its policy in regard to this expansion of the Society's activities. The Council considers it essential that regional activities should be developed only where adequate support for them is clearly forthcoming, and that they should be devised and conducted locally to suit local circumstances. To assist and guide these developments, and to ensure that they maintain a standard in accordance with the Society's traditions, the Council has appointed a Regional Activities Committee.

XI. HONORARY CORRESPONDING MEMBERS

Since making their last report, the Council have further extended the Society's representation overseas by appointing new Honorary Corresponding Members for Calcutta, India, and Philadelphia, U.S.A. It may fitly be remarked here that the success of the Secretary's recent visit to North America (see Section XII) owed much to the work and kindness of the various Honorary Corresponding Members in Canada and the U.S.A.

Mr. G. W. C. Garrould, the Honorary Corresponding Member for Madras, represented the Society at the Tagore Centenary Celebrations held in Bombay early in January by the All-India Bengali Literary Conference. He addressed the Conference, and delivered a broadcast, on the subject of Tagore's paintings (see *Journal*, March, 1961, page 304).

The first official gathering of Fellows of the Society residing in Victoria,

Australia, was convened in Melbourne on 27th April by Mr. L. J. Hartnett, Honorary Corresponding Member for Victoria.

XII. SECRETARY'S VISIT TO NORTH AMERICA

The Secretary visited North America in February. His primary object was to represent the Council at the luncheon held in New York in honour of Professor Simon Lissim, the Senior Honorary Corresponding Member in the U.S.A. (see *Journal*, April, 1961, page 323), but he also took advantage of his journey to the continent to attend the first official gathering of the Society to be held in Montreal, and was present at special functions arranged by Canadian and American Fellows in Toronto and Chicago respectively.

XIII. EXAMINATIONS

There has once again been a satisfactory increase in the number of entries for the various examinations conducted by the Society. The total for Session 1960-61 was 456,774 as against 409,920 in 1959-60, an increase of 46,854.

The following table gives comparative details:

	1960-61	1959-60
(a) Ordinary (Single-Subject)	338,379	302,749
(b) School and Senior School Certificates	77,165	65,610
(c) Oral Tests	8,595	8,279
(d) Grouped Course	28,552	29,107
(e) Teacher's Certificate in Shorthand	962	1,103
(f) Teacher's Certificate in Typewriting	789	616
(g) Road Transport Subjects	1,191	1,232
(h) British Transport Commission (Preliminary examination of candidates under Apprenticeship Schemes)	928	1,084
(i) Royal Air Force Administrative Apprentices (Endorsement of certificates awarded by the Air Ministry)	213	140
	<hr/> 456,774	<hr/> 409,920

At the Ordinary (Single-Subject) examinations there was an increased demand for each of the four Series—Autumn, 1960, and Easter, Whitsun, and Summer, 1961. The great majority of candidates took the examinations at centres in all parts of the British Isles, but there were also entries from pupils of the schools throughout the world for children of service personnel, and a large number of entries from candidates in various parts of the Commonwealth: Nigeria—31,296; Ghana—1,328; West Indies—1,228; Kenya—852; Tanganyika—672; Sierra Leone—641; Aden—411; Gibraltar—354; Brunei—269; British Honduras—266; Bermuda—208; Fiji—194. In addition, there were a few centres in foreign countries, mainly for the examinations in English, under the control of officials of the British Embassy or of the British Council.

For the School and Senior School Certificate examinations entries were received

from nearly 12,000 candidates at over 600 schools in various parts of England, Wales, and Northern Ireland, as well as from the schools for children of service personnel throughout the world; in addition, there were 7,154 subject-entries from over 1,100 candidates in Nigeria. This year, the subjects of Music and Rural Science were offered for the first time at the School Certificate examinations, the numbers of entries being 39 and 28 respectively.

In May, 1961, revised schemes of examination for the Teachers' Certificates in Shorthand and Typewriting were introduced, with greater emphasis on the teaching aspects of the subjects. This may have affected the demand for the Shorthand examination, but it is gratifying to see the increase in entries for the examination in Typewriting.

Once again there was a slight drop in the number of entries for the examinations in Road Transport subjects, despite intensive publicity by the National Committee on Road Transport Education. The benefits of the scheme of studies leading to these examinations do not appear to be fully appreciated by employers and employees, particularly on the 'goods' side of the transport industry.

During the Session there have been a large number of meetings of the various committees connected with the examinations, on which the Society has valued the help and advice of officials of central and local education authorities, of head teachers and specialist teachers, and of members of professional bodies and business organizations.

Three Silver Medallists at the Society's examinations in 1960 have been elected to Associate Membership.

The Worshipful Company of Clothworkers has again generously contributed towards the cost of the silver and bronze medals awarded on the recommendation of the examiners to candidates obtaining very high marks in the Advanced and Intermediate Stages of the Society's examinations.

A fuller report on the Society's examinations during Session 1960-61 will be published in the *Journal* in the autumn.

XIV. INDUSTRIAL ART BURSARIES COMPETITION

It is gratifying to note that the 1960 Industrial Art Bursaries Competition showed a further increase in the number of candidates and in the value of the Bursaries awarded. In all, 726 candidates, from 81 centres, entered the competition, and 40 Bursaries, of a total value of £4,825, were awarded to the candidates. In addition 44 candidates received diplomas of commendation. In 1959 653 candidates entered the competition, and 34 Bursaries of a total value of £4,425 were awarded; 57 candidates were commended.

In the 1960 competition 16 of the successful candidates were between 18 and 21 years of age, and have now been elected to Associate Membership of the Society. (There were 10 such candidates in 1959.)

Of the several reasons for this continued growth and importance of the

competitions, not the least is that they are increasingly recognized as providing one of the best opportunities for young designers to show their skill and for bringing them into touch with manufacturers and others likely to make use of their services. The assistance which the competition gives to manufacturers in discovering youthful talent is clearly indicated by the readiness of industry to contribute towards the cost of the Bursaries themselves.

Two new sections were included in the competition for the first time: for *advertising design*, and for *exhibition display*. The other branches of industrial design represented were: *carpets*; *domestic electrical appliances*; *domestic solid-fuel-burning appliances*; *dress textiles*; *electric-light fittings*; *film, stage and television settings*; *flat glass decoration*; *footwear*; *furnishing textiles*; *furniture*; *laminated plastics*; *packaging*; *pottery*; *typography*; *wallpaper*, and *women's fashion*. In addition a George M. Whiley Bursary, also of £150, was again available as either a sole or an additional award to a successful candidate in any section of the competition.

The customary illustrated report on the Competition was published, and a summary of this was included in the April issue of the *Journal*. The annual exhibition of winning and commended designs was opened in the Society's exhibition rooms on 2nd May by Sir John Summerson, who addressed an audience including many of the successful candidates and their teachers, together with representatives of the supporting industries and the jurors responsible for judging the competition. The exhibition will subsequently be shown in Belfast, Bradford, Middlesbrough, Salford, Nottingham and Manchester.

In view of the success of the exhibition of the 1958 Industrial Art Bursary designs held in Melbourne, Australia, last year, consideration is now being given to the possibility of arranging a similar exhibition, consisting of winning and commended entries from the 1960 competition, to be shown in South Africa under the auspices of the South African Association of Arts.

During 1960 thirty-eight of the Bursary winners in the 1959 and previous competitions travelled either on the Continent or, with the help of additional money received from other sources as a result of their Bursary awards, to the United States and Canada. Details of these tours are given in the official report. It is expected that over fifty of the winning candidates in the 1960 and previous competitions will undertake visits later this year or in the spring of 1962. Arrangements are also being made for a number of them, together with some of the commended candidates, to gain practical experience by visiting factories and design studios in this country.

A further competition is to be organized in 1961 in which awards of the total value of £5,875 will be offered, covering twenty fields of industrial design. All the sections of the 1960 competition will again be included. A section for domestic gas appliances will be re-introduced and a section for plastic consumer goods will be included for the first time. Details of this competition are announced on page 640 of this issue of the *Journal*.

The Council and the Bursaries Board are glad of this additional opportunity to express their gratitude for the financial support which firms and organized sections

of industry continue to give to these competitions, and also for the ungrudging co-operation of those responsible for judging the work submitted.

XV. THOMAS GRAY MEMORIAL TRUST

The following activities have been conducted with the aid of funds available under the terms of the Thomas Gray Memorial Trust, the objects of which are 'the advancement of the science of navigation and the scientific and educational interests of the British Mercantile Marine':

Scholarships for Deck-Boys and Young Seamen

A further grant of £85 was made to the Royal Society of Arts and Seafarers' Education Service Joint Scholarship Scheme for the provision of scholarships for deck-boys and young seamen. This scheme is administered by the Seafarer's Education Service.

Since the scheme started, 27 scholars are known to have gained Master's certificates, and 66 others hold certificates ranging from that of Mate (Home Trade) to First Mate (Foreign Going).

Prizes for Ships' Apprentices

Five silver medals, five bronze medals and five prizes of nautical instruments were awarded to the boys who gained the highest marks in the examinations conducted by the Merchant Navy Training Board.

Training Ship Prizes

Prizes to a total value of £30 offered to the training ships *Arethusa*, *Indefatigable* and *Mercury* for the boy in each ship who, in the opinion of his officers, would make the best sailor, were awarded to P. E. Snowdon of *Arethusa* (£10), A. G. Bray of *Indefatigable* (£10) and M. J. Green of *Mercury* (£10).

The Society's silver medal, offered as a navigation prize to a cadet in *General Botha*, the South African Nautical College, was awarded to Cadet Ronald Hutchings.

Extra Master's Silver Medal

The silver medal offered to the candidate who obtained the highest marks in the Ministry of Transport's examinations for the Extra Master's Certificate in 1959 was awarded to D. N. L. Alder.

Extra Chief Engineer's Certificates

The silver medal offered to the candidate who obtained the highest marks in the Ministry of Transport's examinations for the Extra Chief Engineer's Certificate in 1959 was awarded to David Duff.

Deed of Professional Merit

Although only one submission was received in connection with the Society's offer of a silver medal for a deed of outstanding professional merit performed at sea by a member of the British Mercantile Marine between October 1959 and September 1960, the Society felt that the deed reported fully justified the award.

The medal was accordingly awarded to Skipper Albert Brown, of the Steam Trawler *Northern Foam*, for the skill and resolution which he had displayed in towing the Steam Trawler *Sletnes* from Buchan Ness to Aberdeen during a gale. This episode was fully described in the May, 1961, issue of the *Journal*.

XVI. ENDOWED PRIZES

Offers of prizes were again made under the terms of the Howard and Fothergill Trusts. The Howard Prize of £50 was subsequently awarded to Dr. Kenneth Cochran for his essay entitled 'The status of the petrol engine in light road transport, with a note on a method of improving its thermal efficiency'. Fothergill prizes of £10 each were awarded to Mr. V. Cable for his essay describing 'Rescue from crashed fired aircraft' and to Mr. John A. Chambliss for his invention of a heat detector and fire alarm. The full results of these two competitions were published in the November, 1960, *Journal*, and the Fothergill prize entries appeared in the succeeding issue.

XVII. SPECIAL ACTIVITIES COMMITTEE

The Special Activities Committee has continued to review current topics with which the Society might usefully concern itself, and several developments noted in this Report have resulted from its recommendations.

The most important of these is the survey of the impact of industrialization on the amenities of the Hampshire Basin, reported in Section XVIII below. This survey is part of a wider consideration which the Committee has been giving to the difficult problems created by modern industrial and social developments, and follows the conferences and lectures arranged by the Society over the last few years to consider their effects on the countryside.

The Committee's interest in education and training, and particularly in scientific and technical education, has been maintained during the past session. Mr. A. R. N. Roberts, its Chairman, is a member of a sub-committee of the British Institute of Management which is considering training for business management. The Committee has been particularly interested in the part that the universities may be able to play in this form of training, and it has also discussed the future pattern of university education in Britain, on which subject Mr. J. S. Fulton, the Principal of the University College of Sussex, read a paper to the Society on the 10th May.

In a broader context, the Committee discussed Commonwealth Technical Training, and also gave consideration to the use of solar power and its possible value for Commonwealth countries with plenty of sunshine.

There are three further matters of special interest which, although not initiated by the Committee, may appropriately be noticed in this section of the Report.

Following the consultations mentioned in last year's Report, the Society awarded silver medals to 'the most outstanding student' in each of the three constituent colleges of the Imperial College of Science and Technology and in the Manchester College of Science and Technology.

The Society's series of three Cantor Lectures on the presentation of the visual arts and science on television drew attention to the importance of this medium of communication in modern life, and followed a letter sent by the Council to the Committee on Broadcasting (the Pilkington Committee). The letter set out in principle the Society's views on the significant contribution that television and broadcasting could make towards the proper use of leisure.

On the initiative of the Federation of British Industries, the Society in October last joined with that body, the Royal Institute of British Architects, the Council of Industrial Design, the Society of Industrial Artists and the Design and Industries Association in making representations to the President of the Board of Trade that the Government should promote British participation in the Triennale Exhibition at Milan, and it seems likely that those representations will be successful.

XVIII. INDUSTRIALIZATION AND THE COUNTRYSIDE

On the recommendation of the Special Activities Committee, the Society, with the help of funds generously provided by the Nuffield Foundation, recently initiated a survey of the effects of industrialization on the amenities of the Hampshire Basin, including Fawley, Southampton, Portsmouth and Poole. The survey at this stage is being directed, so far as major industry is concerned, to the activities of the electricity (generation, transmission and distribution) industry, and of two oil companies responsible for large-scale installations and distribution respectively. It will, however, include some examination of the effects of the development of small but expanding industries in the area. It will also consider the consequences of the policies and decisions of the Government and the local authorities, and take careful account of the opinions of local residents and associations, as well as those of the statutory bodies and amenity societies concerned with the preservation of the beauty of the countryside.

The Society has set up a strong committee, including representatives of industry and of the amenity societies, to advise on the general direction of the survey. The Acton Society Trust has accepted responsibility for the conduct of the survey, and has seconded two of its officers to assist Dr. H. E. Bracey, of the University of Bristol, who is in charge of the field work.

XIX. COMMONWEALTH SECTION COMMITTEE

This session the Committee again arranged a joint meeting with the Royal Commonwealth Society, when Earl De La Warr, Chairman of the Joint Commonwealth Societies' Conference, spoke on 'The Work of the Commonwealth Societies'. The full programme given in Section XXVIII below also includes two further papers chosen with the interests of senior school children particularly in mind—'Sport in the Commonwealth' and 'Photography and Exploration in the Himalayas'.

The centenary of the birth of Rabindranath Tagore occurred on 6th May,

and the Commonwealth Section co-operated with the Royal India, Pakistan and Ceylon Society, the East India Association and the Royal Commonwealth Society in arranging a programme of meetings to mark this event. As the result of an approach made by the Chairman of Council on behalf of the associated Societies, the London County Council has agreed to affix a memorial tablet to the house in Hampstead (No. 3 Villas on the Heath) where Tagore stayed in 1912.

During the year the new awards for film production and journalism which had been advocated by the Committee were made for the first time (see Sections VI and VII of this Report). The film award was mentioned in the last Report of the Committee. That for journalism was planned and put into effect with the assistance of the Commonwealth Press Union, the Colonial Office and the Commonwealth Relations Office, and both ventures, which were well received overseas, have benefited from the encouragement given by the two Departments of State. It has been decided that the awards shall alternate in future years, beginning with the film award in 1962.

XX. THE LIBRARY

Fellows and Associates have made more use of the Library during the last twelve months than in any similar period since 1956. The collection has again benefited from the presentation of books, among which may be mentioned the *Short History of Technology* and Volumes XVI and XVII of the *Survey of World Textiles*. The work of cataloguing the archives and rebinding the early printed books and eighteenth-century manuscript minutes of the Society's Committees has continued. Items from the archives were loaned to the Museum of English Rural Life at Reading for exhibition during the autumn.

On 5th December, 1960, a special meeting was held in the Library. On this occasion a small exhibition was staged to illustrate its history and scope. A paper on the same subject was read to the meeting by the Curator-Librarian and subsequently printed in the January *Journal*. The following articles in the series 'Studies in the Society's Archives' have appeared in the *Journal*:

- 'Dr. Peter Templeman and His Appointment as Secretary of the Society in 1760', Part III, by W. Campbell Smith (September, 1960).
- 'A Campaign to Promote the Prosperity of Colonial Virginia', Parts I-III, by R. L. Hilldrup (November and December, 1960; January, 1961).
- 'An Address from the Society to King George III; Presented 3rd February 1761', by D. G. C. Allan (February, 1961).
- 'The Society of Arts and the Committee of the Privy Council for Trade, 1786-1815', Parts I and II, by D. G. C. Allan (April and July, 1961).

XXI. FILM EVENINGS

Four Film Evenings were held during the Session, all of them well attended by Fellows and their guests.

The programmes shown included the Malayan Government's documentary film which received the Society's Commonwealth Film Award for 1960—*Master*

Farmer—Kum Yeng; the two films made by the Shell Film Unit to mark the Tercentenary of the Royal Society—*A Light in Nature* and *The Revealing Eye*; one of the premier award winners in the 1959 Harrogate Film Festival—British Transport's *The Travel Game*; and John Stewart's experimental film *Grantchester*.

Amongst the other films screened were *Journey into the Weald of Kent*, *Pembrokeshire My County*, *Stone into Steel*, *An Artist Looks at Churches* and *Michael Ayrton*.

In most cases the respective Producers or Directors enhanced the pleasure and interest of the programmes by introducing their films in person.

XXII. CHRISTMAS CARD

The production of an annual Christmas Card continues to be a service appreciated by Fellows. The complete stock of 25,000 Cards which had been ordered last year was exhausted some weeks before Christmas.

The subject of the Card was the trial of scale models of ships which the Society organized in 1762, and an accurate reconstruction of the scene was painted by Miss Anna Zinkeisen. This was the seventh painting which she has produced for the Society since it introduced the sale of Christmas cards exclusively for the use of Fellows in 1949.

XXIII. MEMBERSHIP

The number of Fellows on the roll after the Council Meeting in June was 6,634, as compared with 6,441 at the same time last year.

Making allowance for deaths, resignations and lapses of membership during the year, the total addition to the Register is of course greater than the above difference would indicate, and the net result is not unsatisfactory.

The extent of the Society's activities is of necessity governed by its income, and a large and growing body of members is therefore required if its work is to develop. It is hoped that both the gradual increase in numbers and the standing of candidates proposed for election will be maintained.

The number of Companies in association has also risen from 53 at the time of the last Annual Report to a present total of 71. The Council would like to see yet more trading concerns taking a direct interest in the Society's work by associating themselves with it in this way, and they would be glad if Fellows able to do so would use their good offices to this end.

XXIV. OBITUARY

The deaths of a number of distinguished Fellows of the Society were recorded in the *Journal* during the year. Amongst the memoirs which appeared were those of the following: Mr. George Archer, President of the Mond Nickel Company; Sir Harold Bowden, President of Raleigh Industries Ltd.; General Sir Kenneth Crawford, formerly Deputy Chief of the Imperial General Staff; Dr. C. J. T. Cronshaw, a leading figure in the organic chemicals industry; Mr. Shaw Desmond,

the writer; Mr. Harry Ferguson, the manufacturer of farm machinery; Sir Kenneth Harper, a former Chairman of the Burmah Oil Company; Sir Charles Reid, the coal-mining expert; Mr. G. S. Sandilands, well-known as an art critic, and a valued contributor to the *Journal*; Sir James Shelley, first Director of the New Zealand Broadcasting Service; Sir Stanley Spurling, who gave long and devoted service to public affairs in Bermuda; Dr. D. B. Steinman, the American engineer of bridges; Mr. Walter Dorwin Teague, the American industrial designer; Mr. Ernest Thesiger, the actor; Dr. Oleg Yadoff, the physicist, who rendered outstanding services to the Allied cause in the Second World War, and the Earl of Verulam, who made important contributions to industrial development and welfare in this country.

XXV. NEW COUNCIL

During the year Sir Charles Dodds resigned from the Council, and Mr. Antony Hopkins was appointed to fill the resulting vacancy.

In accordance with the Bye-laws four Ordinary Members of Council retire in June, 1961, namely, Mrs. Mary Adams, Mr. Geoffrey de Freitas, Lord Netherthorpe and Miss Anna Zinkeisen. In their place the Council propose the election of Miss Sylvia Crowe, Dr. P. F. R. Venables, Miss Audrey Withers and Sir Walter Worboys. A further vacancy will also arise by the Council's intention to elect Lord Nathan as their new Chairman. Lord Nathan will then fall to be elected as a Vice-President, and the Council propose Sir Ronald Nesbitt-Hawes for election as an Ordinary Member in Lord Nathan's stead.

XXVI. STANDING COMMITTEES

The lists of those appointed to serve on the Standing Committees of the Society, and of the Society's representatives on the governing bodies and committees of certain other organizations, were published on pp. 65-9 of the December, 1960, issue of the *Journal*.

XXVII. FINANCE

The Income and Expenditure Account for 1960 reveals a satisfactory surplus of £13,646. By the Council's decision mentioned in last year's report, half of this sum is carried to the Premises Purchase Fund. This is in addition to the £5,000 which was transferred to the Fund during the year in accordance with the decision to pay that amount annually into the Fund. As will be seen from the Financial Statements published in the *Journal*, the sum standing to the credit of the Premises Purchase Fund on the 31st December, 1960, was £36,620. Thus a good start has been made on the task of raising—by 1971 if possible, but in any case not later than 1978—the £157,612 needed to purchase the freehold of the adjoining premises.

Although at the end of the year the Society's finances were in a satisfactory state, the need for vigilance and economy still remains. Large new commitments have been accepted through decisions taken by the Council during the year to

provide necessary increases in the salaries of the Society's staff; to provide much-needed additional accommodation for the Examinations Department; to increase the scope of the Industrial Art Bursaries Competition; and to undertake extensive but essential repairs to the roof of the Society's House. These will all impose heavy demands on the funds available.

XXVIII. LECTURES AND PAPERS

In a sessional programme of otherwise varied character, special prominence was this year given to education, with six lectures and papers examining different aspects of the subject at home and overseas. The steel industry in this country was also treated to a thorough review. This emphasis reflects the Council's policy, begun in the previous year, of devoting several meetings in each session to matters of fundamental national significance.

During the session, advantage was also taken of two important anniversaries: Mr. Oliver Millar's lecture on 'The Restoration Portrait' took place during the highly successful exhibition held at Burlington House to mark the Tercentenary of the Restoration of the Monarchy, and Sir Gerald Barry, Director-General of the Festival of Britain in 1951, assessed the influence which that great event has had on design in the decade just passed.

ORDINARY MEETINGS

Chairman's Inaugural Address

THIS ENGLAND: CHANGE IN A LIFETIME. *Oswald P. Milne* (page 8)

Trueman Wood Lecture

THE TRAINING OF SCIENTISTS AND ENGINEERS FOR INDUSTRY. *Sir John Cockcroft* (26th April)

Peter Le Neve Foster Lecture

THE INFLUENCE OF THE FESTIVAL OF BRITAIN ON DESIGN TO-DAY. *Sir Gerald Barry* (page 503)

Alfred Bossom Lecture

ARCHITECTURE IN TRANSPORT. *Dr. F. F. C. Curtis* (page 434)

Fred Cook Memorial Lecture

THE RESTORATION PORTRAIT. *Oliver N. Millar* (page 410)

Cadman Memorial Lecture

THE COAL MINING SITUATION TO-DAY. *F. G. Glossop* (page 77)

Thomas Gray Memorial Lecture

THE TRAINING OF OFFICERS FOR THE MERCHANT NAVY. *Captain G. W. Wakeford* (page 17)

Fernhurst Lecture

THE NUTRITIONAL PHYSIOLOGY OF LIVESTOCK UNDER NATURAL CONDITIONS. *Dr. K. L. Blaxter* (19th April)

First Edmund Rich Memorial Lecture

WELFARE AND THE ENGLISH SCHOOL. *W. F. Houghton* (page 567)

Papers

LEARNING TO READ: AN EXPERIMENT. *I. J. Pitman* (page 149)
 SOME TRAFFIC PROBLEMS OF LONDON. *A. Samuels* (page 181)
 THE ARCHITECT'S APPROACH TO ENGINEERING IN TALL BUILDINGS. *Sir Thomas Bennett* (page 203)
 THE FUNCTION OF LABOUR AND THE TRADE UNIONS IN INDUSTRY AND COMMERCE. *W. J. Carron* (page 248)
 ERGONOMICS—FITTING THE JOB TO THE WORKER. *Dr. C. B. Frisby* (page 265)
 WALLPAPER AND ITS HISTORY. *Eric A. Entwistle* (page 450)
 THE TIMBER INDUSTRY. *Rodney Perry* (page 490)
 GEOGRAPHY AND THE BUSINESS WORLD TO-DAY. *Lord Nathan* (page 516)
 THE STEEL INDUSTRY TO-DAY AND TOMORROW: A TECHNICAL REVIEW. *Sir Andrew McCance* (page 579)
 THE ECONOMIC DEVELOPMENT OF THE UNITED KINGDOM STEEL INDUSTRY. *Sir Robert Shone* (page 595)
 SOME FOLKLORE AND HISTORY OF DIAMOND. *Professor S. Tolansky* (15th March)
 TECHNICAL ADVANCES IN PACKAGING. *Dr. V. G. W. Harrison* (3rd May)
 THE FUTURE PATTERN OF UNIVERSITY EDUCATION IN THE UNITED KINGDOM. *J. S. Fulton* (10th May)
 HUMAN PROGRESS AND ECONOMIC GROWTH IN THE DEVELOPING COUNTRIES. *M. G. Ionides* (17th May)

SPECIAL MEETING

(Presentation of the Bicentenary Medal and R.D.I. Diplomas)

Oration

LARGER THAN LIFE. *A. B. Read* (page 138)

COMMONWEALTH SECTION

Sir George Birdwood Memorial Lecture

RABINDRANATH TAGORE. *Professor George E. Gordon Catlin* (page 613)

Sir Thomas Holland Memorial Lecture

THE COMMONWEALTH ASSOCIATION IN THEORY AND PRACTICE. *Professor J. D. Bruce Miller* (page 710)

Neil Matheson McWharrie Lecture

RECENT ECONOMIC DEVELOPMENTS IN CANADA. *His Excellency the Honble. George A. Drew* (18th May)

Henry Morley Lecture

BAUXITE AND ALUMINIUM WITH SPECIAL REFERENCE TO THE COMMONWEALTH. *Wilfred Brining* (25th May)

Papers

THE BRITISH CONTRIBUTION TO EDUCATION IN AFRICA. *Professor L. J. Lewis* (page 32)
 THE WEST INDIAN SUGAR INDUSTRY. *Peter Runge* (page 91)
 SPORT IN THE COMMONWEALTH. *G. A. McPartlin* (page 279)

PHOTOGRAPHY AND EXPLORATION IN THE HIMALAYAS. *Captain John Noel*
(12th January)

SOVEREIGN NIGERIA. *Sir John Macpherson* (page 527)

THE WORK OF THE COMMONWEALTH SOCIETIES. *Earl De La Warr* (27th April)

CANTOR LECTURES

The following three courses were delivered during last Session:

THE MODERN CHEMICAL INDUSTRY IN GREAT BRITAIN. *Dr. James Taylor*

- I. TOWARDS A PHILOSOPHY OF THE MODERN CHEMICAL INDUSTRY (page 339)
- II. THE SPRINGS OF PROGRESS (page 353)
- III. THE MODERN CHEMICAL INDUSTRY IN GREAT BRITAIN (page 367)

MODERN PHOTOGRAPHY

- I. PHOTOGRAPHY IN INDUSTRY AND COMMERCE. *M. J. Langford* (page 665)
- II. PHOTOGRAPHY IN MEDICINE. *C. E. Engel* (page 680)
- III. PHOTOGRAPHY IN EDUCATION. *Miss Margaret F. Harker* (page 694)

THE PRESENTATION OF SCIENCE AND THE ARTS ON TELEVISION

- I. THE PRESENTATION OF SCIENCE. *Dr. Tom A. Margerison* (1st May)
- II. THE PRESENTATION OF THE VISUAL ARTS. *Basil Taylor* (8th May)
- III. THE PRESENTATION OF MUSIC. *Lionel Salter* (15th May)

JUVENILE LECTURES

The following two Juvenile Lectures were delivered during the Christmas holidays:

THE MYTH OF THE PHOENIX. *Dr. Maurice Burton* (page 382)

RAILWAYS IN OUR TIME. *Cecil J. Allen* (page 298)

XXIX. MEDALS FOR PAPERS

The Council have awarded Silver Medals for the Session 1960-61 to the following lecturers:

For Papers read at Ordinary Meetings

A. Samuels. 'Some Traffic Problems of London'

W. J. Carron. 'The Function of Labour and the Trade Unions in Industry and Commerce'

Dr. C. B. Frisby. 'Ergonomics—Fitting the Job to the Worker'

Professor S. Tolansky. 'Some Folk Lore and History of Diamond'

J. S. Fulton. 'The Future Pattern of University Education in the United Kingdom'

For Papers read at Meetings of the Commonwealth Section

Professor L. J. Lewis. 'The British Contribution to Education in Tropical Africa'

Sir John Macpherson. 'Sovereign Nigeria'

The Chairman then invited questions or comments upon the Report.

MR. J. L. A. HUNT: As a Fellow of the Society, may I congratulate the Council upon yet another remarkable and most interesting Report? In particular I should like to comment on Section XIII, dealing with the Examinations of the Society. I think that at a time when we seem to be in the throes of examination mania, and have a very great number of highly competitive examining bodies, it is very gratifying to see the able and promising manner in which the Society's examinations have developed over recent years in various spheres.

THE CHAIRMAN: If nobody has any further comments to make on the Report I should like to underline a few matters in it.

I think you will all agree that it is a satisfactory Report and that the activities of the Society have not only been maintained, but have expanded in a number of directions.

You have heard of Dr. Luckhurst's successful visit to America to attend the luncheon in honour of Professor Lissim. Professor Lissim himself recently paid us a return visit, and attended the last Council Meeting—he is the first overseas Vice-President to have done so.

In last year's Report it was announced that Mrs. Edmund Rich had left the Society a sum of money to found a lecture in honour of her late husband. We heard the first of those lectures in March, given by Mr. Houghton, the Education Officer to the London County Council, and it was very successful.

During the last year we altered the times of some of our lectures, in the belief that younger people in industry would find it easier to attend evening meetings. We have not come to any definite conclusion as to whether this was an improvement, but certainly we noticed that the 6 o'clock lectures were attended by a greater number of younger people obviously interested in the particular subjects, and as a result the discussions were very lively. So we are keeping the two times—2.30 and 6 o'clock—in the programme for next Session.

As to regional activities, both in the Midlands and in the North-West Area we have moved well forward, as you see from the Report. If the local events already planned prove a success, and Fellows in other areas wish to do the same kind of thing and there is proper support, we shall try to institute further regional centres.

The way in which the numbers of entries for our examinations have increased is phenomenal—of course, everybody is very examination-minded in these days! Our success in these examinations is in large measure due to the work of our Examinations Department—to Mr. Wheeler, our Examinations Officer and all the staff under him, which is now quite large. Our Printing Department under Mr. Nicholls, too, has a share in this work and has dealt with it very efficiently. We are not complacent, however. Educational ideas are continually changing, and if the Ministry of Education, for example, changed their plans, there might follow a great drop in the examinations entries.

Our Industrial Art Bursaries Competition also continues to expand, and I think it is doing a very valuable work in helping to rear the young designers who are

needed in industry. This is more than ever essential; if British goods are to hold their place in the markets of the world their design should be right.

The Commonwealth Section has made two innovations by establishing awards for documentary film production and for outstanding services to journalism in the Commonwealth. These awards, which will be given in alternate years, have been very well received.

Another new, and potentially very important move is the inquiry into the effect of expanding industrial activity and its proper planning in relation to the preservation of the countryside. We have great hopes that this survey in the Hampshire coastal area may be a valuable guide to the future planning of industrial development.

At this year's Annual Reception, we decided that we would give a platform to a promising student at the Royal College of Music or the Royal Academy of Music, who was about to begin his professional career. Mr. Barstow, who was selected to give the first such recital, delighted us with a very polished performance on the pianoforte.

Our Senior Treasurer is shortly going to deal with the subject of finance, and I need say little on this subject. But I would remind the audience that we do depend very largely for our income on the subscriptions of members and that, like other institutions, our costs continue to rise. If any of you can introduce suitable candidates for Fellowship, the Council will always be very glad of it. We have made some headway in building up the Premises Purchase Fund, but we have a long way to go, and I suggest that the fund is an object well worthy of donations and bequests.

I think, from what you have heard and what I have said, you will feel that the prestige and influence of the Society stand as high as ever. In these days, when we hear a great deal about the conflicting claims of the Sciences and Arts in the field of education, and where a rather narrow specialization is often practised, it is good to have a body such as this, with a large number of members, who realize that if civilization is to satisfy the spirit of man and be something more than material prosperity, artists and scientists must work together.

I now beg to move the adoption of the Report and will call upon Sir Ernest Goodale to second it.

MR. G. RUNDLE-THOMAS: I wonder if I may, rather belatedly, raise a matter about which I wrote to the Deputy Secretary? It is in regard to the future programmes of lectures and their balance of subjects.

By permission of the Chairman, a letter from Mr. Rundle-Thomas was read in which he put forward the view that, in the Society's lecture programme, insufficient attention and time were devoted to the fine arts, and in particular to painting and architecture.

THE CHAIRMAN: Our short title, 'Royal Society of Arts', is in a manner a little misleading, for one might very well expect such a body to deal very largely with painting and architecture, as you have suggested. But we must remember our full title, 'Royal Society for the Encouragement of Arts, Manufactures and Commerce', which covers a very large field. Although the Society remains interested in the

fine arts, it is the industrial arts with which we are, and for long have been, particularly closely linked. In the Session just past I agree, very few meetings were devoted to painting and architecture, but if you look through the lists of papers in earlier Sessions I think you will find a better distribution and more of these particular subjects. But we shall certainly take note of what you say. I myself am very keen that the fine arts side of the Society's interests should not be neglected.

MR. G. RUNDLE-THOMAS: Thank you, Mr. Chairman. I appreciate your remarks, and of course I am only too well aware of the value of the Society's work in keeping abreast not only of the arts but also of industrial subjects. I have attended lectures here for at least thirty years and therefore I am well aware of the great number and variety of lectures that have been given, but it is very much the feeling of a number of Fellows that the fine arts are being gradually squeezed out of the schedule. Certainly, that view has been expressed to me by several people, and I wished to place it on record.

The motion that the Annual Report be adopted, having been seconded by Sir Ernest Goodale, was put to the meeting and carried unanimously.

The Chairman then called upon Mr. F. A. Mercer, the Senior Treasurer, to move the adoption of the Accounts for the year ended 31st December, 1960.

MR. F. A. MERCER: The Accounts have already been circulated in the July issue of the *Journal* and you have already heard that we have made a very satisfactory surplus on our year's work. You have also heard of the provision which has been made towards our Premises Purchase Fund. These satisfactory figures were made possible by an increase in income from subscriptions, from receipts from *Journal* sales and advertisements, and of course to a major extent by an increase in the work of our Examinations Department. I think we can look forward with confidence.

On the other hand, I should warn you that we must be prepared for a smaller surplus next year. The large increase in the work of the Examinations Department involves additional staff, the provision of additional accommodation, and the provision of equipment. All of this will be a major item of expenditure in the present year. Where we ourselves are taking over space formerly let we shall also lose some of the rents which we formerly had from tenants. We have also, as trustees and owners of this building, to ensure that it is kept in a proper state of repair and, unfortunately, our architects this year have warned us that we must expect to expend a considerable sum on the repair of the roof.

Before I ask you to adopt the Accounts I should like to call your attention to the work of our Accountants. This work has increased very largely this year, and I think that no one who has not worked with them knows the extent and variety of the tasks to which they are subjected. We are most grateful to Mr. Purdam and Mr. Baker for the magnificent work they do on our behalf.

I now formally request that the Accounts be adopted and approved.

The motion that the Accounts be adopted, having been seconded by Mr. A. R. N. Roberts, was put to the meeting and carried unanimously.

The Chairman thereupon proposed a vote of thanks to the Society's Treasurers which, having been seconded by Mr. A. R. N. Roberts, was put to the meeting and carried unanimously.

THE CHAIRMAN: We now come to the next item on the Agenda, the Election of Officers. With regard to this, Bye-law 75 provides that the President, Vice-Presidents, the two Treasurers and the 24 Ordinary Members of Council shall be elected annually by ballot at the Annual General Meeting. The Council nominations for these offices have been duly posted, and in respect of the offices of President, Vice-Presidents and Treasurers there have been no other nominations. Therefore, in accordance with Bye-law 81, I declare the persons nominated to those particular offices to be elected for the ensuing year.

As announced in the Report, the Council has nominated, and intends to elect, Lord Nathan as the new Chairman of Council for the coming year. I need hardly tell you that the Society will be in good hands. A distinguished man of affairs, he is a solicitor by profession. He has held many public offices and, during his time as a Member of Parliament, was Minister of Civil Aviation. His interests are very wide, and for the last three years he has been the President of the Royal Geographical Society. He has, of course, already served most ably on the Council of this Society for a number of years.

You will see that 25 persons have been nominated to fill 24 vacancies as Ordinary Members of Council. A ballot for these Officers will therefore be necessary, and I will now ask the Deputy Secretary to explain the procedure laid down in the Bye-laws.

THE DEPUTY SECRETARY: Before I do so, Sir, I should explain that by an oversight, when the list of those nominated by Council for election as Ordinary Members of Council was published in the July *Journal* as the balloting list, the name of one of them was omitted in error. Although the list of Council nominations exhibited in the Library in accordance with Bye-law 77 was correct, technically, under the Bye-laws, as there were only 24 nominations for 24 posts listed in the July *Journal* there should not have been an election. When I discussed this unfortunate situation with Mr. Sidney Loweth (who had been nominated by Sir Albert Richardson and Professor Corfiato), he was kind enough to say that he would not wish to take advantage of a slip of this nature, and agreed to the insertion of the missing name in the list. The list of nominations, therefore, which you were given as you came in to-day is now correct. I should like to apologize to you, Sir, to Mr. Loweth, and to the Council and Fellows for the omission, which I very much regret, and once again to thank Mr. Loweth for his forbearance.

THE CHAIRMAN: I also am sorry that the mistake described by the Deputy Secretary occurred, and I am grateful to Mr. Loweth for allowing the error to be corrected, and the balloting list to be put in order.

The Deputy Secretary then summarized the procedure for balloting as laid down in Bye-law 81.

In reply to a question from Mr. Loweth, the Chairman confirmed that in accordance

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ANNUAL GENERAL MEETING

with this Bye-law, Fellows might strike out as many names from the list of nominations as they wished.

The Chairman then appointed two Fellows, Mr. J. L. A. Hunt and Mr. W. H. Hammond, as scrutineers, and the balloting took place. The Chairman having been shown the result of the balloting by the scrutineers, he declared the following to be elected as Ordinary Members of Council for the ensuing year:

Sir Hilary Blood	Sidney Loweth
The Honble. G. C. H. Chubb	Sir Ronald Nesbitt-Hawes
Lord Conesford	Paul Reilly
R. E. Dangerfield	Sir Gilbert Rennie
Peter A. Le Neve Foster	A. R. N. Roberts
E. Maxwell Fry	Sir Philip Southwell
John Gloag	Professor S. Tolansky
Dr. Stanley E. F. Gooding	Dr. P. F. R. Venables
Milner Gray	C. M. Vignoles
Antony Hopkins	Hugh A. Warren
J. C. Jones	Miss Audrey Withers
Edgar E. Lawley	Sir Walter Worboys

The Chairman then called upon the Deputy Secretary to announce the complete list of the New Council for 1961-62, which is as follows (names in italics are of Fellows who did not serve on the previous Council in the capacity indicated):

PRESIDENT

His Royal Highness The Prince Philip, Duke of Edinburgh, K.G., K.T.

VICE-PRESIDENTS

Lord Bossom, LL.D., F.R.I.B.A.
Sir George Edwards, C.B.E., B.Sc., Hon.F.R.Ae.S., Hon.F.I.A.S. (President's nominee)
Sir Ernest Goodale, C.B.E., M.C., Hon.F.S.I.A., Comp.T.I.
Robert W. Holland, O.B.E., M.A., M.Sc., LL.D.
Sir Harry Lindsay, K.C.I.E., C.B.E.
Oswald P. Milne, F.R.I.B.A., J.P.
<i>Lord Nathan, P.C., T.D., F.B.A., F.S.A. (Chairman Designate)</i>
The Earl of Radnor, K.G., K.C.V.O.
E. Munro Runtz, F.R.I.C.S.
Sir Harold Wernher, Bt., G.C.V.O., T.D., D.L. (President's nominee)
<i>Brian O'Rorke, R.A., R.D.I., F.R.I.B.A. (Master of the Faculty of R.D.I.)</i>
Professor Simon Lissim (Senior Honorary Corresponding Member in the U.S.A.)

ORDINARY MEMBERS

Sir Hilary Blood, G.B.E., K.C.M.G.	John Gloag, Hon.A.R.I.B.A., Hon.F.S.I.A.
The Honble. G. C. H. Chubb, M.A.	Stanley E. F. Gooding, M.A., M.Sc., M.D., J.P.
Lord Conesford, Q.C.	Milner Gray, R.D.I., PP.S.I.A.
R. E. Dangerfield	Antony Hopkins
Peter A. Le Neve Foster	J. C. Jones, C.B.E., B.Sc., M.I.Mech.E., A.M.I.C.E.
E. Maxwell Fry, C.B.E., B.Arch., F.R.I.B.A.	

Edgar E. Lawley, C.B.E.
 Sidney Loweth, F.R.I.B.A., F.S.A.
 Sir Ronald Nesbitt-Hawes, C.B.E., E.D.
 Paul Reilly, M.A., Hon.F.S.I.A.
 Sir Gilbert Rennie, G.B.E., K.C.M.G.,
 M.C.
 A. R. N. Roberts
 Sir Philip Southwell, C.B.E., M.C.,
 B.Sc.

Professor S. Tolansky, Ph.D., D.Sc.,
 F.R.S.
 P. F. R. Venables, Ph.D., B.Sc.,
 F.R.I.C.
 C. M. Vignoles, C.B.E.
 Hugh A. Warren, M.Sc.(Eng.),
 M.I.C.E., M.I.Struct.E.
 Miss Audrey Withers, O.B.E.
 Sir Walter Worboys, B.Sc., D.Phil.

TREASURERS

F. A. Mercer, Hon.F.S.I.A.
 G. E. Tonge, C.B.E.

The Chairman proposed a vote of thanks to the scrutineers, which was carried with acclamation.

THE CHAIRMAN: The next item of business is the proposal to amend Bye-law 4 to provide for the signature of cheques on the Society's accounts in the absence of the Secretary. The text of the Bye-law as amended was published on page 556 of the last issue of the *Journal*, and a copy of it is also in your hands. The alteration proposed is simply the insertion of the words '(or his deputy as authorized by the Council)' after the word 'Secretary' wherever that occurs.

The motion that Bye-law 4 be amended in the manner described was put to the meeting and carried unanimously.

The Chairman then proposed a vote of thanks to the staff of the Secretary's department in which he referred specifically to the work of Mr. Mercer, the Deputy Secretary, Mr. Skidmore, the Editor of the Journal and Secretary of the Commonwealth Section Committee, Mr. Samson, the Registrar, Mr. Allan, the Curator-Librarian, and Mr. Jacobs, the Bursaries Officer. He also endorsed the tribute already paid to the work of the Accountants by the Senior Treasurer.

The vote of thanks was carried with acclamation, and was acknowledged briefly by the Deputy Secretary.

LORD BOSSOM, LL.D., F.R.I.B.A. (a Vice-President of the Society): At the conclusion of this afternoon's proceedings it is a particular pleasure for me to propose a vote of thanks to our Chairman: to thank him for his charming way of conducting the business—and even more warmly, for his management of the Society's affairs during the past two years.

I have sat on committees here many times under Mr. Milne's chairmanship, and he is always the same—determined to do as much as he can for the Society. Whatever the matter, his attitude is always, 'What more can we do?' During the last two years he has not spared his time nor his energies in the Society's service, and he has gained the affection and respect of everyone with whom he has come into contact.

We thank you very warmly and very sincerely, Mr. Chairman, and wish you good luck!

The vote of thanks to the Chairman was carried with acclamation. There being no other business, the meeting then ended.

MODERN PHOTOGRAPHY

Three Cantor Lectures

I. PHOTOGRAPHY IN INDUSTRY AND COMMERCE

by

MICHAEL J. LANGFORD, F.I.B.P., F.R.P.S.,

delivered to the Society on Monday, 6th March, 1961,

with Peter A. Le Neve Foster, a Member of Council

of the Society, in the Chair

THE CHAIRMAN: Tonight we are going to hear the first of three lectures on modern photography, which is a very appropriate subject for this Society because in 1852 the first public exhibition of photographs ever held took place in this very room, and as a result of that exhibition the Royal Photographic Society came into being. Ever since that very memorable exhibition just over 100 years ago, the Society of Arts has always maintained a fairly close contact with photography and with photographers. For example, the Cantor Lectures of 1882 were delivered by Sir William Abney, those of 1900 were delivered by Sanger Shepherd, and a great many other very eminent photographers have addressed the Society from time to time.

Before I came to the platform tonight, I dipped into the archives of the Society and saw the names of Beck, Dallmeyer, Watkins, Ives and Spencer, all people who have made great contributions to photography. I can therefore assure Mr. Langford that he is in very good company when he comes here tonight to deliver the first of this year's Cantor Lectures on photography.

He is going to talk about a very important subject, and one which I think is far too often taken for granted: the applications of photography to industry. It would be very difficult to think of anyone better qualified than Mr. Langford to speak on this subject.

The following lecture, which was illustrated with lantern slides, was then delivered.

THE LECTURE

Photography—what a vast range of applications have opened up since that historic meeting here in 1853 at which the 'Photographic Society of Great Britain' was formed. Photographers then were gravely handicapped by the technicalities of their medium. The wet collodion process demanded preparation of sensitized glass plates of a size equal to the final print, prolonged exposure times behind primitive lenses whilst the collodion remained wet, and immediate development in unpleasant pyrogallic acid. Serious photography outside the portrait studio was attempted only by enthusiasts possessing above average physique.

Now, with the cutting back of these technical weeds during the intervening century, new uses have been encouraged to blossom. We have photography as a means of mass communication in news coverage, advertising, entertainment and education in its broadest sense. It represents a vital tool of research in medicine and almost every form of science and engineering.

However briefly the multiple uses of modern photography may be covered, it is no longer possible to explore all these avenues in the course of one lecture.

Three aspects—photography in industry, medicine and education—have therefore been selected for rather more detailed coverage. This first lecture is intended as a general survey briefly considering and illustrating a variety of photographic techniques used in industry, and at the same time shedding some light on the activities of the British industrial staff photographer.

For all the money poured into public relations work during recent years, many people still retain distorted and often erroneous views on the many skills and crafts covered by the term 'industry'. Modern industry itself is no longer easy to define, developing as it has such widely varying ramifications.

String, steel, furnishing fabrics and radio isotopes—how can such varied products receive communal grouping? One can only attempt a general definition of industry as involving a tangible, commercial form of product, produced in a factory or works. Factory or works . . . the description still conjures up images of grimy smoke stacks and drab, depressing buildings set in squalid surroundings—a necessary evil, economically important but deadly dull.

And what of the people who work within? Fitters, machinists, laboratory technicians, clerks, draughtsmen . . . surely a *photographer* would be an unjustifiable luxury? Even where a photographer's employment is justified, his work (presumably monotonously photographing machinery or X-rayed metals) must surely be incredibly dull?

Compared with the more popular conceptions of professional photography—advertising, portraiture, and journalism—it may on the surface seem illogical that industrial photographers now form the largest single group within the Institute of British Photographers. Conclusive figures are not available, but it has been estimated that over 25,000 people are engaged on photographic processes in this comparatively new field. Already, photographic manufacturers recognize the importance of this growing market and design a large volume of materials and equipment specifically to fill industrial needs.

My purpose tonight is briefly to cover a wide selection of these industrial applications of photography. Perhaps the best way to implement this would be by first describing the man behind the industrial camera, the industrial staff photographer or 'I.S.P.' The man himself must be essentially versatile, with a reliable technique sufficiently flexible to suit very varied assignments. As stated earlier, no two industries have identical needs, and the photographer must on occasions expect to undertake anything from passport portraiture to press photography, most forms of commercial, advertising, and record work, film production and even fashion photography. Some photographers, in metal foundries and steel works, may take only pictures of their company's products. Others, working for oil companies, photograph almost everything *except* the product. The industrial photographer is a specialist only with regard to the final application of his work.

Secondly, the I.S.P. must be capable of working under what may amount to extremely difficult conditions—from heights, in considerable heat, noise and dirt. Despite physical strain he must still be capable of gaining maximum co-operation from factory personnel. Above all the staff photographer must possess an essential interest in industry generally—almost a dedication to its drama and craftsman skill.

Four broad applications justify photography's place in industry.

1. As a direct part of a production process.
2. As a recording medium, largely in research and administration.
3. For publicity and public relations purposes; pictures of products and facilities for advertisements, brochures and exhibitions.
4. Staff education.

To carry out some or all of these applications a relatively small industrial concern often commences by using the services of a local commercial photographic studio. However, as demand increases, such a system is generally found uneconomic for a large volume of work. In addition, the outsider will seldom be available at short notice and cannot be expected to formulate an intimate knowledge of the company's needs. These are usually the prime reasons for the establishment of an organization's own photographic unit.

Most internal photographic units are normally under the administration of either the publicity manager or a technical director, depending upon the relative importance of the two applications. Unit size will vary from a lone Staff Photographer, to (in the case of the American General Motors Corporation) over 1,100 photographic personnel. The British Atomic Energy Authority is probably our largest single user of photographic staff. Some 70 I.S.P.s are employed, scattered among various centres.

However, a typical industrial department in this country is unlikely to contain more than some four or five personnel. Equipment would probably range from 16 mm. cine, through 35 mm. and 2½ in. sq. still to ½ plate and 10 × 8 cameras. Other more specialized items, such as high-speed cameras, are more economically hired. Lighting units, whilst basically of conventional spotlight or floodlight pattern, would be augmented with highly portable flashbulb systems for use outside the department.

In heavy industry the equipment must be as versatile and tough as the photographer. A random schedule of work might commence with a request for a general view of a machine-shop interior for use as a brochure illustration. Such a shot entails working from the top of a travelling crane, way up in the factory roof amongst the dirt of ages. Next, a fault develops in a machine tool supplied to a customer. After a one hundred mile drive, the photographer must work on his back, half under 20 tons of oily machinery, to record a fractured shaft. After this his work takes him to the bottom of a dry dock, and its notorious coating of slime. Then, at a few minutes' notice, photographs are required in the managing director's office, where a presentation is due to take place. The photographer must not look out of place in any of these locations. Dustcoat, rubber boots, shoes with reinforced toecaps, sou'wester and lounge suit—all have a place in the operator's wardrobe. On such a variety of assignments he must have the capacity for gaining maximum co-operation, and at the same time giving minimum offence. Ability to allay suspicion and distrust on the shop floor, tactful handling of foremen, leaving the right impression with the company's customers, intelligent handling at boardroom level—these are only a few reasons why the staff photographer should be something of a psychologist.



FIGURE 1. Birth of a propeller (all the photographs illustrating this lecture are by Michael J. Langford, reproduced by courtesy of J. Stone & Co.)

The publicity department will expect photographs to make ugly subject matter more glamorous, mundane processes spectacular, and an old corrugated-iron workshop to look like a research laboratory; all this without the aid of set designers, lighting specialists, professional models, camera crane and a host of assistants. On the other hand, publicity photography can be very rewarding in the opportunities it provides for travelling throughout British industry at home and overseas—meeting so many interesting personalities, seeing such an amazing variety of activities. In the shipyards of Barrow-in-Furness, where the machine-gun rattle of riveting and flashes of the welders are as essential a part of the surroundings as ships' plates and red lead paint. The modern production line, where in a 30-yard journey a simple frame is transformed into a fully equipped motor-cycle, ready for the road. An important exhibition in some foreign capital, where international personalities become commonplace. And at Sheffield.

The going is hard as your guide leads you up narrow iron staircases and along dimly lit catwalks, until breasting the last flight you look down on to a breathtaking scene. Below, four stories high, and towering up into the gloom above, the forge silently waits, like Madame Guillotine. Flanking her on all sides are the furnaces—



FIGURE 2. Band-sawing aluminium castings

dozens of furnaces—flames spilling out from the bottom edge of every sliding door. An orange spotlight from an inspection port picks out a furnace man. Gloved hand before him, he peers through his darkened glasses, appraising the inferno within . . . and waiting. A clatter of gears above, and a row of swinging lights moves down the shop. The crane rumbles into position. Lifting claws; like great black tongs, drop towards the furnace door. There is a sudden thrill that can only be likened to the world of the theatre as the moving door reveals a glowing steel ingot of frightening proportions. No shred of artificiality here, no canvas scenery, no stage hands or electricians wait in the wings. This is stark reality—the very sinews of industry. Here are men stripped to the waist, sweat-towels jammed into belts as they run forward a few scorching yards to position the claws. Man seems very primitive.

The exhilaration of experiences such as these accounts for much of industrial photography's attraction. The staff photographer is one of the few privileged laymen to gain such first-hand experience.

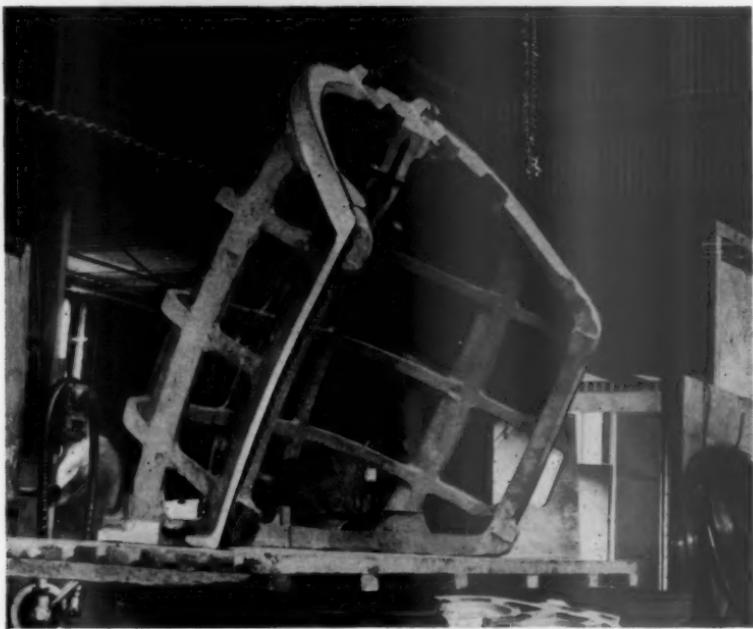


FIGURE 3. *A canopy casting photographed by existing light reveals a distracting background*

In projecting some illustrations of the ways in which modern industry is putting photography to work, I wish to begin by showing the camera as a creative tool in publicity and public relations work. To the public, industry means factories—but a few yards beyond those grimy walls the most spectacular processes are taking place (Figures 1 and 2). Photography is an ideal medium for inspiring confidence in an organization by showing its facilities and craftsmen's skills.

As only rarely may production cease in a shop for the purpose of photographs, lightweight, compact equipment causing minimum disruption and inconvenience is a *sine qua non*. For shots other than large interiors, which still require large stand cameras with various 'movements', industrial photographers are increasingly turning to small hand cameras of the 2½ in.-sq. variety. These offer significant advantages in manoeuvrability and speed of use. Flash, too, offers special advantages under industrial conditions. The enormous power of large flashbulbs is essential in illuminating wide areas of light-absorbing machinery. To produce equivalent illumination from tungsten lamps or even electronic flash sources would call for altogether impractical quantities of weighty power packs, reflectors, stands, cables, etc., to say nothing of the need for electricians in 'wiring-up'.

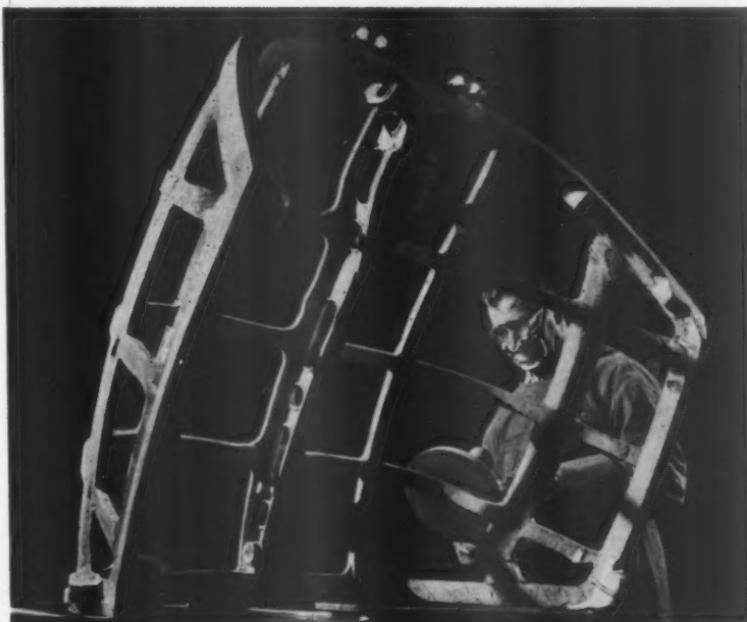


FIGURE 4. Fettling a canopy casting (taken by flashlight)

Apart from its independence from mains electricity, flashbulb equipment has the added advantage of being relatively robust. Inevitably light units receive a degree of rough handling and accidental knocks. A simple flashbulb head represents only a few shillings worth of easily replaceable lampholder. The destruction of an electronic flash-head would be altogether more costly and inconvenient.

Bulbs are actually fired from a small shoulder-slung battery box. This contains a capacitor and may work at voltage up to 300V.—capable of firing 50 or more bulbs in synchronization with the camera shutter. In practice three or four bulbs are more commonly used, each fitted in an individual reflector and connected by a thin lead to the battery box.

On publicity assignments the immense power of flashbulbs is used to special advantage. In many instances a product must of necessity be photographed on the shop floor—if for example it is intended to show an interesting stage of manufacture. Factory backgrounds of corrugated iron, ugly windows and machinery form distractions and may well constitute bad publicity. However, when flash is directed solely on the subject it is possible to suppress unwanted rear detail to a uniform black, simply by balance of lighting (Figures 3 and 4). This admitted falsification of fact can be justified for publicity purposes.

Lighting dramatization may be taken still further to yield no more than a pictorial *impression* of a process. Such photographs find application as exhibition stand backdrops, brochure covers on which lettering may be superimposed, or simply as showroom decoration.

The more extreme creative dramatization, although highly attractive to the photographer, is more the exception than the rule in public relations and publicity work. Pictures must inform as well as attract. Flash provides the key to both—in the I.S.P.'s hands the lighting represents as vital a tool as the camera itself. Future trends in industrial flashbulb equipment are suggested by the recent introduction of a special V.H.F. radio set which, linked to the camera shutter, transmits a brief pulse to receivers in or near the flash-heads. Thus freed from the encumbrances of leads the photographer could work more rapidly and with less danger to other personnel. Advertising pictures showing moving products (aircraft, etc.) could be taken using synchronized bulbs *inside* as well as outside the body-work. Unfortunately at the present time difficulties in obtaining Post Office licences for radio-controlled equipment have become apparent, and until certain anomalies are clarified it is still necessary to make separate application for each and every photographic location.

The industrial photographer faces more problems than mere photographic technique. In fact, it is important that technique should have become so ingrained that he is free to devote more time to the avoidance of external pitfalls. Chief among these is the portrayal of unsafe practices. Engineering ignorance can lead to a pose which, whilst aesthetically pleasing, is in fact technically ludicrous. Safety clothing is provided as an obligation by management, but may not in practice be used by workers for reasons of discomfort. Safety guards may be shown by photographs to be omitted, or tools left where they could be a danger to others. Only intimate knowledge of the processes concerned will avoid these and other *faux pas*.

Couple these problems with the sometimes combined hazards of heat capable of blistering the camera front, smoke and dust to confound lighting, plus a handful of obstructive foremen—and it becomes apparent that the I.S.P. is more than just 'the man who knows what exposure to give' or 'is largely being replaced by the automatic camera'.

The recent introduction of more automatic photographic equipment and materials is in fact proving an inestimable help to the harassed I.S.P.—relieving him of many previously mundane tasks. For instance, technicians such as metallurgists when working away from base are able to ensure technically excellent report illustrations by using 60-second processing cameras and simply shooting until the desired result is achieved. On the administrative side of industry, too, modern automatic document-copying machines are taking over the bulk of this previously menial photographic task. The new document copiers not only operate faster—but being simple enough for office personnel to operate, they free the I.S.P. to tackle more challenging, and consequently more interesting, techniques.

There are naturally limits to any camera's ability to portray a product, one of these being the product itself. Unfortunately there exists a section of industrial

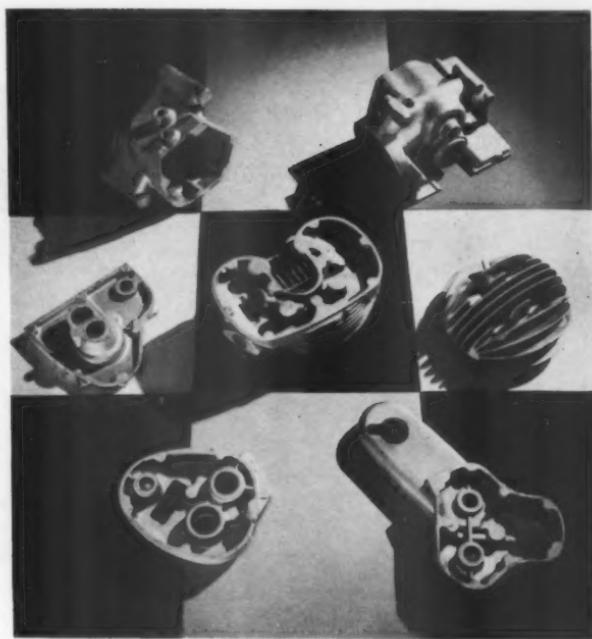


FIGURE 5. *Castings for the motor cycle industry*

management, living in a distant never-never world and believing that (a) The Product looks as it is described by the publicity department, as opposed to its physical appearance, or (b) No photograph is a publicity photograph until it has been retouched. Taken to its logical and awful conclusion we arrive at those hideous products of over-retouching which, having lost all trace of their photographic origin, invite the potential customer to speculate just why this crude camouflage should be necessary. A straight drawing would at least represent a more genuine attempt at illustration. Luckily most of our industrialists are less willing to become engulfed in this portraiture-inspired retouching fever, as witness the very high general standard of British industrial publicity.

Turning to the photographic requirements of technicians, any newcomer to industrial photography will at once be told that any artistic leanings he may possess—niceties of composition, or skilful inclusion of human interest—are superfluous, and must be completely subordinate to impeccable technique. The publicity manager hankers after a picture which will appeal and sell (Figure 5), when necessary extensively dramatizing the subject matter. The technical director insists on fact, not fiction, in pictures which will add weight to arguments set out

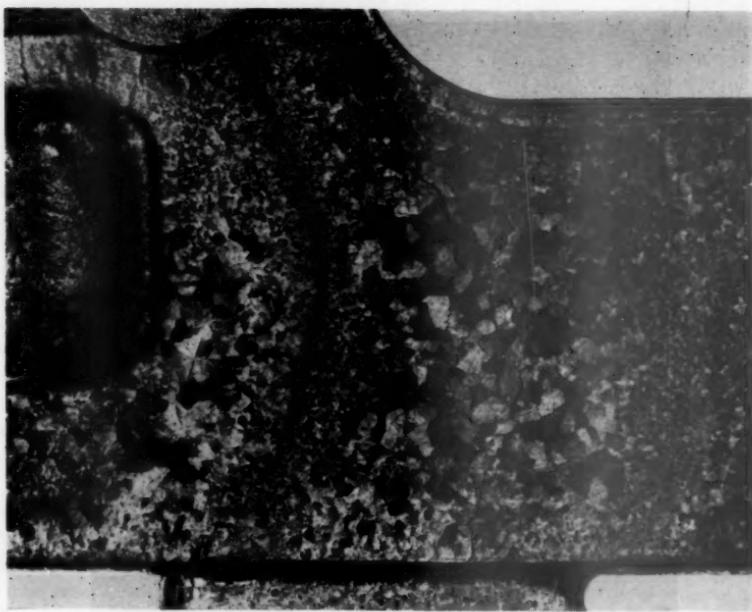


FIGURE 6. Macrophotography—fracture relationship to grain structure — for a metallurgical report

in a report. The subject matter he has to offer will range from an etched metal surface (Figure 6) to an oscilloscope trace. If his company is primarily concerned with metals, the staff photographer will spend a good deal of his time recording small areas of specimens (macrophotography), to accentuate grain structure, hair cracks, inclusions, wastage, corrosion, erosion, and all the other aberrations which haunt this material. Similarly, if the product is in the field of electronics, plastics, textiles, chemicals, etc. Each industry has its own specialized requirements of applied photography. Although at first sight these may all seem rather dull, each presents its own particular problems, and is in the nature of a challenge. Accepted in this spirit, technical photography can be interesting and instructive, particularly with regard to lighting selection and the use of appropriate emulsions. The majority of technical records of this nature are produced in the photographer's studio, on a 5×4 plate camera or 35 mm. (for colour slides).

Other company employees have a call on the services of the photographer. The safety officer will need to show the scene of an accident, the obstruction of a gangway, the height of a work bench—usually for evidence in a Court of Law. A foundry foreman may have to record a difficult mould construction, to file against possible re-orders. The works engineer requires progress pictures of new



FIGURE 7. Reinforced concrete roof
—a typical building progress picture

buildings and installations, for his archives. He will wish to record the depth of foundations, the stage reached by a certain date, and the method of constructing specific sections (Figure 7). For all such purposes a good photograph is infinitely more explicit than a lengthy description or sketch.

More and more industrial organizations find that the publication of house journals and works newspapers is well rewarded by improved internal relations and heightened team spirit. Such publications not only set out to become 'parish magazines' within the works or group—many carry general-interest illustrated news stories connected with the firm's products. The photographer's task of providing most of these illustrations can lead him on the most varied assignments. With organizations such as the major oil companies a considerable volume of photography overseas is needed for large-scale internal public relations distribution. On these tours their staff photographers are expected to not only record the company's direct activities but also the way of life of the local peoples and the

ways in which oil revenue is improving social conditions. Such wide briefs offer considerable scope to the imaginative photographer.

But no matter what size the organization, internal publications also call for a considerable volume of domestic 'bread and butter' pictures. These are the portraits of retiring employees, at all levels; the presentations; the V.I.P. visits; the annual dinners; and the Works' Sports Day.

Little mention has so far been made of film production, and this opens up a vast sub-division which the small department is hardly in a position to tackle. A full-blown production unit consists of a team of specialists in each stage of a film's evolution. The still photographer must realize his limitations. Elaborate publicity films for home and overseas consumption are expensive projects and best undertaken either by one of the many independent film companies existing for this purpose, or in the case of large companies by a separate internal film unit. However, developments in 16 mm.—particularly in the use of magnetic sound tracks—enable modest technical, instructional and public relations films to be made by the small department with comparative ease and considerable financial saving.

The company will also expect its I.S.P. to help in the booking and presentation of film programmes to audiences of executives and apprentices, and even (at Christmas time) of employees' children. This last audience is the most outspokenly critical of all—woe betide the projectionist whose machine breaks down during the annual cartoon festival!

Visual aids in the form of film strips and lantern slides are all part of the general photographer's routine schedule. In the wake of a well-established demand for colour transparencies comes an increasing need for colour prints; more and more departments are equipping themselves to undertake some of the newer print processes.

Versatility, which, as I have attempted to demonstrate, lies at the heart of industrial staff photography, must have its limitations. In examining industry's use of photography as a research tool it immediately becomes apparent that no one department, let alone one photographer, can be expected to possess the requisite skills for such specialized and advanced applications *in addition* to the requirements of general publicity illustration.

This is indeed the case, and such work is most profitably undertaken by photographic sections attached to specific laboratories. As a research tool photography is used extensively to record photo-elasticity—strain and stress patterns made visible in a scaled transparent model illuminated between crossed polarizing filters. Another optical effect, the Schlieren system of making visible minute variations of refractive index within a substance, also relies on photography as a means of recording for future diagnosis. Its applications range from the discovery of pressure variations across a specimen in wind tunnel tests to the mixing properties of liquids and gases. Once again, as indeed with any use of the camera as a technical 'sketch block', self-processing materials and automatic equipment are finding special application.

The photography of fabrics and suitably prepared metals by invisible radiation provides valuable methods of product quality control. Minor variations in the

fluorescence of woven materials under ultra-violet illumination, recorded and accentuated by photography, disclose batch discrepancies or contamination. Similarly, castings first immersed in a fluorescent liquid and subsequently washed may retain traces of the liquid in specific areas where 'porosity' is present. Photography under ultra-violet illumination reveals these faulty areas.

Of the numerous industrial infra-red photographic techniques, visual recording of heat distribution has wide applications. An electrical appliance or a combustion engine is set up in a darkened room and photographed on plates sensitized to long-wave radiation. Comparison of the resultant negatives with a 'control' series of densities affords accurate temperature measurement over the external surface of the specimen.

It would be possible to spend several evenings merely outlining photographic methods of quality control. High-speed recording of moving machinery, motion study (using winking lights of fixed frequency as a time base) and photography's respected cousin, industrial radiography, are now all specialist sciences in their own right.

Photography as an integral part of production processes has fascinating possibilities. Consider just one example, filmsetting—where photography and automation work in partnership to increase productivity in the printing industry. Details vary with equipment, but basically signals from a keyboard select character by character from a master negative and cause them to print optically on to high contrast film. With spacing and other controls in the hands of an electronic computer, the compositor rapidly arrives at a properly laid negative of his complete page of text. From this he may easily prepare his plates, instead of previously resorting to matrixes and molten metal.

We are likely to hear far more of such integration of electronics in the industrial sphere, not only as a production and research tool but also, as new equipment evolves, in general publicity work. If this is one direction in which technique is being developed, the psychology of applying visual communication methods in industry is receiving equal attention. Future use of good industrial photography will be considerable, both in this country and abroad. The increasing use of 'impact' pictures for advertisements on a national scale . . . The trend towards illustrated company reports, better internal relations, new visual aids and greater use of technical illustrations, particularly colour . . . Publicity is beginning to assume a more international flavour, as markets widen and competition sharpens. The photographer is an integral part of new projects evolving as part of this second industrial revolution, and is likely to share in their prosperity.

We have come a long way since the days of Fox Talbot and Scott Archer—days of collodion and pyrogallic acid. Even now barely on the brink of its possibilities, industrial application has every prospect of eventually becoming the largest and most important branch of the profession. The profession we call photography.

DISCUSSION

THE CHAIRMAN: That was a very good paper, and I am sure there are a lot of questions you wish to ask.

Perhaps I could start the questions going by asking Mr. Langford about a point which has affected me very much. I have had to deal with industrial photography and I am interested in the use of flash. I wondered whether this has not brought Mr. Langford into conflict with the safety officers—I have in mind the objections which are made to flash in many chemical works. Mr. Langford, could you elaborate on the safety aspects of flash under the conditions met with in many coal mines, chemical works, and so on?

THE LECTURER: This business of safety is a very tricky point. There have been one or two nasty accidents, not only through flash bulbs exploding but through the heat of the flash bulb alone igniting inflammable material in the air. For example, there was an accident in a gin distillery. A great deal of inflammable vapour was present, but unfortunately the photographer did not know this and fired a flash bulb, injuring himself considerably. The difficulty is to know where the responsibility lies: with the industrialist who failed to tell the photographer of these dangers or with the photographer who failed to tell the industrialist of the snags of his equipment.

With coal mines this is a difficult problem where inflammable gases exist, and in most coal mines flash is definitely banned. I believe the National Coal Board have made an electronic flash for use in mines, but since it weighs something like a hundred-weight it is inconvenient. It is completely safe—being made of armour-plated glass and metal—but very inconvenient. There does not seem to be any way round this; I cannot see any solution at all. I am afraid that under such circumstances the poor photographer has to resort to existing light or tungsten illumination.

MR. A. POWIS BALE: As an engineer I appreciated this really wonderful condensation of photography, but there were two other angles Mr. Langford might have mentioned. One is the remarkable aeroplane photography, whereby you can take photographs almost through heavy cloud.

The other is a more commercial point. Does the use of colour photography make three-colour printing for catalogue work, say, cheaper than the usual art-work process without colour photography?

THE LECTURER: Aerial photography is a vast field, and if we mentioned every aspect of it I think we should be here all night. This is a very important branch of photography and some very fine work has been done, particularly by specialists in this particular field.

On the whole I should say that colour photography is not making a great deal of difference in the reproduction field. I think its main application these days, in terms of printing, is in internal reports, in illustrations where colour must be used for technical purposes. For a long time transparencies will be the paramount method of reproducing colour.

As for the cost, I do not know; it is still very expensive.

MR. E. A. MARLAND: May I ask whether electronics has been combined with high-speed cinema photography in the field of increasing frames exposed per second? I seem to remember that during the war this made great strides without electronics, purely by shutter manipulation, shutter design and the technique of keeping the image stationary with respect to film. It seems that with electronic flash, repetitive, this has quite a wide application. Has anything been done on that?

THE LECTURER: A lot has been done in that direction. The snag, of course, is cost, because the price of equipment such as strobe lighting for cinema photography is fantastic. This is a branch of photography which might be considered part-scientific and part-industrial photography.

The problem is to keep the image still; it does not matter about the film as long as this is moving at the same speed as the image. It is now possible to take photographs at the rate of something like 100 million a second and at speeds round about

a 100-millionth of a second. This involves very elaborate equipment and I am afraid one would not find a great deal of original apparatus outside America.

MR. G. MACKENZIE JUNNER: I should like to emphasize the importance of warning workers and other people when flashing is about to be done, because I remember what happened many years ago, when I was having some photographs taken in an iron mine at Irthingborough. In those days we were using magnesium powder for open flash. There were some miners at the other side of one of the walls and they came tearing out, saying that it was the first time in their lives they had ever known there to be a thunder-and-lightning storm in an iron mine. They were terrified; they thought something unearthly was occurring.

Another example I saw concerned one of the present members of the Society's Council, Mr. Roland E. Dangerfield. I was sitting near him when a photographer came up and flashed a bulb in his face. He was just about to make one of his usual serene and well-informed speeches when the bulb burst all over him, and the shock almost finished that speech, because he sat down after saying only a very few words.

THE CHAIRMAN: As there are no more questions, I am sure that you would like me to thank Mr. Langford on your behalf for having come tonight and for having given us a very stimulating and extraordinarily interesting paper. I have been connected with industrial photography for about thirty-five years, and I have certainly learnt a great deal from it.

When I introduced Mr. Langford, I said something about previous Cantor Lecturers and assured him that in coming here tonight he was in very good company. After listening to his paper, I am quite sure that if Sir William Abney—who was the first photographer ever to deliver a Cantor Lecture—could be back with us tonight, he would think he was in very good company too.

The vote of thanks to the Lecturer was carried with acclamation, and the meeting then ended.

II. PHOTOGRAPHY IN MEDICINE

by

C. E. ENGEL, F.I.B.P., F.R.P.S.,

*of the Department of Medical Illustration, Guy's Hospital
Medical School, delivered on Monday, 13th March, 1961,
with Sir Charles Dodds, M.V.O., M.D., D.Sc., Ph.D.,
F.R.C.P., F.R.S., Courtauld Professor of Biochemistry,
University of London, in the Chair*

THE CHAIRMAN: Mr. Engel's lecture is particularly concerned with the application of photography in medicine and, of course, the question of recording in medicine has always been one of the greatest importance. The earliest methods which were available were written descriptions of clinical cases, and there is a long line of people who made wonderful clinical summaries of cases, starting even with Hippocrates, down to Sydenham and modern times. In those days that was practically the only method of making a record. Then in the sixteenth century we got the development of the medical illustration, of which there are some magnificent examples by Michelangelo and later by Vesalius. Still later, in the eighteenth and early nineteenth centuries, there was the coloured model. Many of these are strikingly life-like, but of course very voluminous and unsuited for general purposes.

Finally, in the middle of the last century we came to photography. We are very lucky in having with us the real master of this particular form of science. He is on the staff of Guy's Hospital and has made many signal contributions to this science. He has had a distinguished career. He was educated at Birkbeck College, and joined Guy's in 1948. He is a Fellow of the Royal Photographic Society and of many others; he is Chairman of the medical group of the Royal Photographic Society.

I will not embarrass him by reading out further distinctions. I always think that a good Chairman is one who makes full use of his chair. Therefore I shall qualify in that way and call upon Mr. Engel.

The following lecture, which was illustrated with lantern slides and films, was then read.

THE LECTURE

The use of photography in medicine is virtually as old as photography itself, certainly senior to radiography by at least forty years. The Royal Society of Medicine still has a series of quite outstanding clinical records made in 1855 by the superintendent of an asylum in Surrey. Indeed, it is a sobering experience to find in the medical literature of the second half of the nineteenth century that virtually the entire range of potential applications of photography in medicine is already clearly defined and discussed. Almost twenty years before the turn of the century a report stated that nearly all the major hospitals in Paris enjoyed the assistance of full-time photographers.

However, with one or two notable exceptions, the profession of medical photography, as we know it to-day, did not emerge until the end of the Second World War. There are, at the present time, well over three hundred medical photographers

employed in our hospitals and medical research institutions. This does not, of course, include the many doctors and technicians who practise a certain amount of photography as part of their work, or the research workers who may use photographic techniques as one of their methods of investigation or recording.

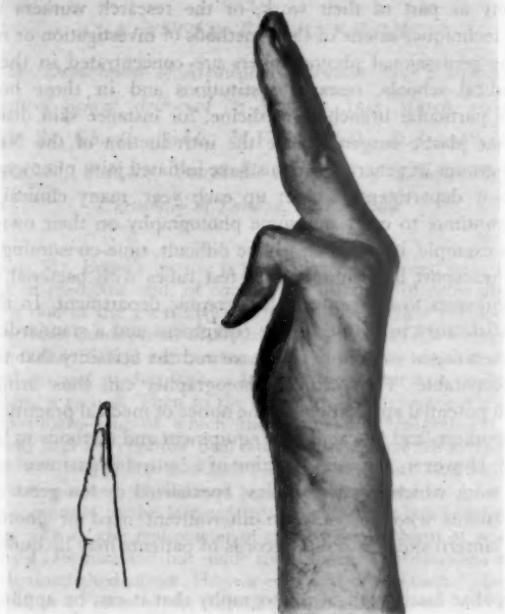
Most of the professional photographers are concentrated in the big teaching hospitals, medical schools, research institutions and in those hospitals which specialize in a particular branch of medicine, for instance skin diseases, diseases in childhood or plastic surgery. Since the introduction of the National Health Service, some groups of general hospitals have initiated joint photographic services.

Although new departments are set up each year, many clinical and research departments continue to carry out some photography on their own account. To quote but one example, it would clearly be difficult, time-consuming and possibly dangerous to transport large numbers of test tubes with bacterial cultures daily from their incubators to the central photographic department. In this instance it is far more satisfactory to devise simple equipment and a standardized technique which the bacteriologist can apply with ease and the certainty that the results will be strictly comparable. The medical photographer can thus bring appropriate techniques and potential applications to the notice of medical practitioners, teachers and research workers, and he can devise equipment and methods to be used by the doctor himself. However, the main function of a central department is to undertake photographic work which is too complex, specialized or too great in volume for the medical worker who has only an intermittent need of photography. The production of lantern slides and film records of patients may be quoted as but two examples.

It is the peculiar fascination of photography that it can be applied in so many different ways to so many different aspects of medicine. The possibilities become truly infinite when it is appreciated that virtually all branches of science are freely called upon to play their part in medicine; from stress analysis in dentistry and orthopaedic surgery and high-speed cinematography in the study of vocal chords—procedures normally associated with engineering rather than medicine—to the recording of electrical impulses in cardiology or the visual documentation of chemical reactions—all methods more usually identified with practices in physics or chemistry.

It would be an impossible task to mention all the branches of medicine separately and to enumerate the uses each one can make of photography. It may, therefore, be more profitable to discuss the applications of photography to the trinity of research, communication and practice.

'Before and after' photographs represent, perhaps, the best known aspect of medical photography. Recording in clinical and surgical practice is used to assess the progress of a disease or the effect of treatment. Here the photograph represents a permanent record which can be used as a visual memory. Indeed, photographs may sometimes reveal details which had not been observed on the living patient. Such pictures are free from the distractions of the ward or outpatients' department and they are not influenced by the personality of the patient. To be of maximum value in this respect the image should draw the eye of the observer to the area of

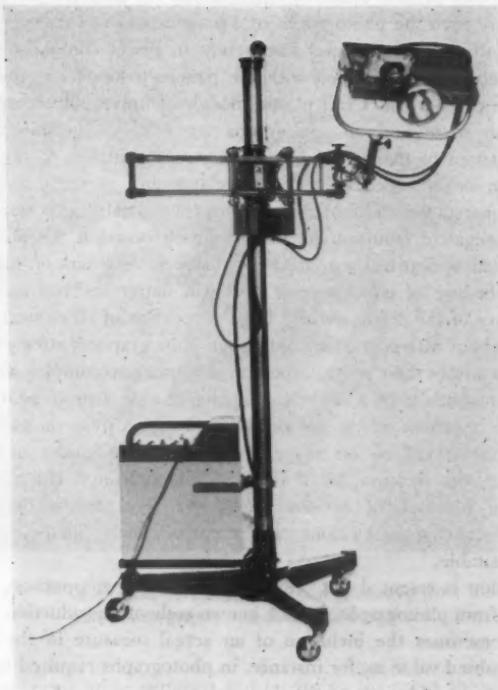


*Photograph of hand with diagram
to demonstrate functional disability*

main interest; extraneous details, such as a fussy background, jewellery or clothing, should not be allowed to distract. There are, however, some exceptions. Plastic surgeons, in particular, may wish to study their patients as they would appear in everyday life, and it may be desirable, on occasion, to record the patient's personality rather than particular aspects of his body.

Memory, at its best, can offer only generalized impressions, so that serial records must be regarded as indispensable not only to the practising physician and surgeon, but also to the research worker. Photographs taken over a period of time allow both horizontal as well as vertical comparison; horizontal: the study of records of one patient from the time he was first seen by the doctor to the present time; vertical: the comparison of photographs of different patients.

Successful comparison must depend on standardization of each photograph with regard to the area recorded, angle of view, scale of reduction or enlargement, lighting and photographic material. Alteration of any of these factors may lead to misinterpretation of what is in most instances a two-dimensional reproduction of a three-dimensional subject. Repetition of the same angle of view is often the most



*Semi-automatic surgical camera
with 'dam-buster' focusing*

difficult task with the irregularly and asymmetrically shaped human body, particularly when prominent areas of soft tissue are subject to variation due to physiological changes, positioning or pressure. The scale of reproduction is not only a function of the distance between lens and film but also of the distance between lens and subject. Fairly bulky but virtually automatic equipment has been devised to ensure repeatable film-to-lens and lens-to-subject distances by using the now famous 'dam-buster' device of two light spots which superimpose on each other at a predetermined distance. The same principle has been applied in a semi-automatic camera above which can be operated by any member of the operating theatre staff. By contrast a portable combination of a 35 mm. reflex camera linked with an electronic flash discharge tube can achieve at least a fair degree of standardization if the same lens distance and aperture settings are used on each occasion, so that photography by the doctor in his consulting room can also be employed for useful comparative studies. One well-known department is at present

experimenting with definite scales of reproduction for different parts of the body, so that in future even the photographs of a patient who was transferred from one hospital to another may still lend themselves to direct comparison. Sometimes a control subject is photographed with the patient to underline the pathological deviation from the normal. Until plastic models of universally acceptable normal limbs for both sexes and all age groups are readily available, such *ad hoc* comparisons cannot be more than a temporary makeshift.

Lighting can be arranged in a known relationship to the camera. This will avoid false interpretation of highlights and shadows. Lastly, it is essential that the same type of negative emulsion be used on each occasion. Orthochromatic, or blue/green sensitive, film will reproduce a red scar as very dark on the final photograph, while the use of panchromatic film will flatter the treatment by hiding virtually all trace of the defect. A very large proportion of all clinical photography to-day is carried out with colour film. Although photographers attempt to eliminate all the variables within their control, these processes are so complex and the human eye so critical towards even a slight colour change that a prominent surgeon has been known to comment on the colour change in both pyjamas and patient as a remarkable achievement of his surgery. Colour approximates most closely to reality and may, on occasion, be of diagnostic significance. However, it is also attended by a number of serious handicaps. To mention only one, the influence of the background colour on the subject itself can be significant and therefore undesirable.

Standardization is essential not only for purposes of comparison, but also for measurements from photographs. Here a known scale of reproduction is of primary importance. Sometimes the inclusion of an actual measure in the picture area can be of undoubted value as, for instance, in photographs required for the assessment of radiotherapy of lesions on the skin surface. The study of physical types and development is now an established discipline, and somatotyping makes extensive use of carefully posed photographs for the measurement of individual limbs in relation to the rest of the body. Measurements in depth from a stereoscopic pair of photographs, known by the cartographer as photogrammetry, is only gradually coming to be applied to medicine. While the necessary equipment is still too complex and expensive for everyday routine use, simplified apparatus, specially designed for medical use, is already available to the radiologist.

Measurements from outlines which depend on soft tissues are not easy to control. The skygraphic method produces a white image on a black background by illuminating the limb, backed by a sheet of photographic paper with a small light source from a relatively long distance away. Silhouettes, produced by placing the patient between the camera and a brightly lit background are more appropriate where larger areas are involved and produce sharply defined contours without distracting surface details.

Movement can be measured by a variety of methods. The extent of wrist movement, for instance, can be accomplished by making two exposures on the same negative and superimposing a standard grid on transparent film when the positive print is made. Dynamic events such as walking can be studied by attaching light

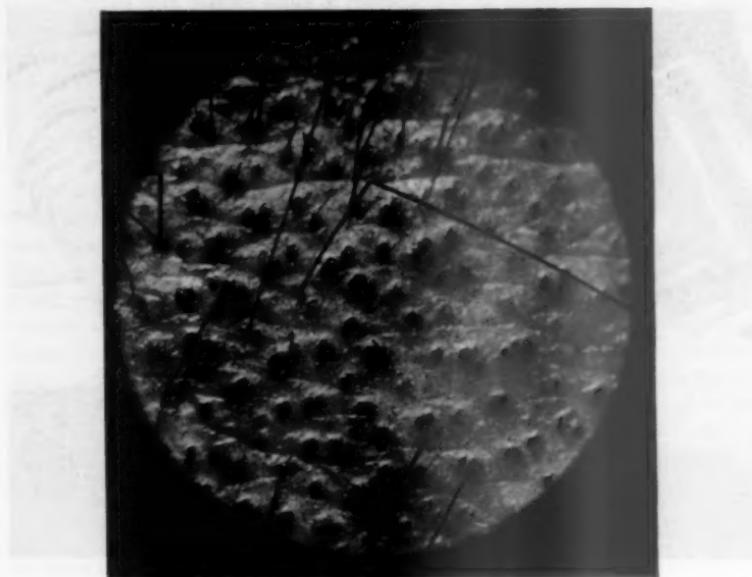


Automatic focusing and exposing camera for photomacrogrography (see illustration on p. 686)

bulbs to the relevant limbs or joints and recording the paths through which these lights will move on one static piece of film. Alternatively, a greasy substance is applied to the soles of both feet, so that subsequent steps will leave imprints on exposed photographic paper. During development greasy areas will repel the solution and remain white surrounded by black areas of metallic silver. This method is also well suited for simple palm or foot prints.

Close-circuit television has been used as an intermediary device to record eye movement. One camera transmits the image of a test object to a receiver which the patient is asked to observe. A second camera relays a specular reflection produced on the patient's eye to a second receiver where it is superimposed on the image of the test object from the first camera. A still or film camera can then be used to prepare permanent records for subsequent study and analysis.

The photographic emulsion is also capable of recording radiation which is invisible to the naked eye. The very short wave radiation from isotopes will register on a photographic emulsion. Autoradiography is thus able to record and make visible the presence, quantity and distribution of isotopes. Substances to which the isotopes have attached themselves within the tissues of specific organs can therefore be traced by bringing histological sections into intimate contact with a special photographic emulsion.



'Bent hair' in *Alopecia* (magnification $\times 8$)

The use of X-rays in radiography is well known, but it should be emphasized that radiography is quite distinct from medical photography as an auxiliary branch of medicine. However, in recent months photography has come to play an increasingly important part in radiography. Image intensifiers accelerate electrons, caused to be emitted by X-rays which have penetrated the patient, and concentrate them on a quite small metal target where their energy is converted into fluorescence. While these devices reduce the radiation to the patient, either a still or a motion picture camera is required to secure a permanent record. More recently still, television has been linked to radiographic apparatus, and again the permanent record is obtained through a conventional camera. Mass miniature radiography, which is widely used to detect diseases of the lung amongst the country's population at large, uses a camera to photograph the fluorescent screen on which the radiographic image is displayed.

Somewhat nearer the visible spectrum lie the ultra-violet wave bands. Most of these are absorbed by ordinary glass, and special quartz lenses must be fitted to microscopes to make use of these waves in the study of cell contents where individual components of one cell will absorb ultra-violet to different extents. These effects can be recorded on photographs in corresponding shades of grey, or, with the aid of special devices, such as the Land Translation microscope, in different colours

on colour film. Television, both black and white and colour, may be used to reduce the intensity and therefore the toxic effect on living cells, but, again, photography must be called in to provide a permanent visible record from the receiver screen. Ultra-violet radiation can also be used for clinical applications in two distinct ways. The near ultra-violet at about 3,600 Å is able to penetrate normal glass lenses, so that its otherwise invisible effect at the skin surface can be recorded. It does not penetrate the skin to any appreciable extent, so that it will produce a very sharp image of surface detail. It is easily absorbed by even very slightly pigmented areas, so that these can be shown where the unaided eye can detect very little or no difference in comparison with the surrounding skin. Its second, quite different property is that ultra-violet radiation can excite fluorescence in certain substances and organisms. By the use of appropriate filters the photographer can ensure that no ultra-violet but only the visible fluorescence is allowed to pass through the camera lens and thus on to the black and white or colour film. This method can be of considerable diagnostic value during the examination of certain bacteriological cultures, of some fungi, and of chromatograms where some of the substances can only be detected by their ability to fluoresce under ultra-violet radiation.

At the other end of the visible spectrum are the heat or infra-red wave bands. Specially sensitized photographic emulsions are capable of recording the effect of infra-red up to about 12,000 Å. Image converters, television camera tubes and other electronic devices can reach rather further into the longer infra-red wave bands. Some American devices, initially intended for rocket detection, are now being used experimentally to detect pathological growth in patients where increased vascularization creates a local increase in temperature. Wavelengths around 8,000 Å are mainly used to record images of the subcutaneous venous pattern. Radiation in this region can penetrate the skin sufficiently to be absorbed by the venous blood which is reflected by all other tissues. The resulting shadow image is never really sharp, as the rays are scattered to a considerable extent during their double journey through the tissues.

Another important application of infra-red is its use for the recording of events or phenomena in total darkness. Thus human as well as animal subjects can be recorded unobserved, as the eye is not sensitive to infra-red radiation. Numerous applications in behaviour study will suggest themselves to the psychologist and biologist—the study of audience reaction to projected images may be quoted as an example. A number of workers have also used this technique to study the reaction of the pupil of the eye to light of different intensities.

Ultrasonic radiation is now emerging as a diagnostic and research tool. The effect of ultrasound can be recorded as a shadow image direct on a photographic emulsion which is immersed in either developer or fixer if previously fogged by a short exposure, or indirectly by photographing the oscilloscope trace produced by the ultra sound echo.

Photography can also be used to record appearances and events inside the human body. Endoscopy has been practised by physicians and surgeons for a long time. However, only in recent years has it become possible to obtain colour photographs of the bronchii, intestines and bladder almost as a matter of routine. Large

orifices can be examined and recorded with open endoscopes where the necessary light can be passed down as well as up a fairly wide tube. Workers in France have perfected a method of piping very intense light through a quartz rod running parallel to a narrow diameter endoscope which is equipped with a series of small lenses. A surgeon in Melbourne has constructed a television camera, no bigger than an electric shaver, which can be held against the end of an endoscope once this has been inserted into the body. At the present time experiments are being carried out with fibrescopes. These are flexible bundles containing some 25,000 individual fibres no more than .002 in. in diameter and running parallel to each other. A small lens at the distal end will conduct an image through each fibre by internal reflection, and the mosaic of the 25,000 resulting images can be picked up by a television camera tube for display on television receivers.

Photography of more accessible cavities, as for instance the ear and the mouth, can be achieved by direct photography with coaxial lighting. A similar system is employed for the photography of the retina where vascular changes can be of positive diagnostic value.

Most of the applications so far have been concerned with the patient. However, bacterial cultures, laboratory animals, surgical and post-mortem specimens, as well as instruments and apparatus, are frequently photographed for research, for teaching, or for publication. In most instances fine detail is of particular importance in this aspect of medical photography. In close-up and photomacrography the image in the camera is several times bigger than the original subject. The greater the degree of magnification in the camera, the smaller is the depth of field, that is, the distance in front of the camera which will appear in sharp focus. This makes photomacrography of living subjects extremely difficult. A recent solution to this problem is a camera where two feelers on either side of the lens impinge on the subject just outside the area to be recorded. These feelers retract as the camera is lightly pressed towards the subject and in turn depress a series of springs which will close the electric circuit and fire a high-speed flash lamp at the precise moment when the lens is at the appropriate distance from the subject.

Even higher magnifications are obtained with the microscope. While the central photographic department may practise a certain amount of photomicrography to satisfy the needs of clinical and teaching departments, most research workers will prefer to do their own. The electron microscope is now becoming standard equipment in many research departments, and again photography from the fluorescent screen is necessary to obtain permanent records.

This enumeration of photographic techniques and their applications is by no means exhaustive, but it will be apparent that the medical photographer must be conversant not only with the specialities of his own subject but also with current trends in medical research, practice and teaching.

In recent years the photographer has also come to be involved in the uses of illustrations in their widest sense for the communication of information. This includes the preparation of lantern slides, films, and exhibitions for the instruction of undergraduates and postgraduates and for the presentation of new information before learned societies. Quite apart from preparing illustrative material for

publication in text books or specialist journals, some photographic departments have actually embarked on the printing of temperature charts, registration forms and small instructional manuals by the off-set lithography process. These additional duties are leading many medical photographers to study such diverse subjects as lecture theatre design and educational psychology. They can no longer regard the production of photographs or films as the sole aim of their professional activities. Their responsibilities now include the effective use of illustrative material, be it for analysis in a research project, for diagnosis or for the communication of ideas, concepts or facts to undergraduate, postgraduate or specialist audiences through the still or moving picture. Close circuit television, too, is becoming increasingly more the concern of the medical photographer.

Much of what has already been said about still photography is equally true for motion picture photography. Its application in research, clinical practice and communication is appropriate whenever the study of movement is involved. Through the phenomenon of persistence of vision the film can portray movement. By speeding up the rate of recording and projecting at normal speeds it is possible to slow down and, as it were, stretch time. This is high-speed cinematography. Phenomena, which are too fast for detailed study by the unaided eye, as for instance the movements of the vocal cords or blood racing through an artery, can be presented for study and analysis. In time-lapse cinematography single pictures are taken at regular intervals of perhaps one per minute and these are then projected at the normal rate of 16 or 24 pictures (or frames) per second, so that it is possible to contract time. The growth and behaviour of cells is normally so slow and gradual that even hours of observation through the microscope reveal very little. However, time-lapse cinemicrography can show within one minute a process which may have taken an hour or more to develop.

Research in the medical sciences can therefore use cinematography on numerous occasions. Often a close and repeated study, perhaps with the use of a loop film, will be sufficient to arrive at a valid conclusion. A straightforward record of a patient before and again after the administration of a drug or of some other form of treatment may show a significant and obvious improvement. Such a record is far more accurate than any verbal description prepared from memory and it could usefully be called an *aide mémory*. Quite frequently, however, an overall, subjective impression is not sufficient, and a more detailed analysis must be undertaken. A film record is then projected frame by frame, and tracings of relevant pictorial data are made, so that changes can be expressed as a relationship between displacement in space and time. Motion picture film is used in these two ways in conjunction with endoscopes for the exploration of body cavities, with radiography for investigations of the function of joints and of the behaviour of internal organs, with high-speed cameras to study the vocal cords and nervous disorders involving fast movements of the limbs, with the microscope for research into the function and behaviour of very small structures and of individual cells, and lastly with infrared and ultra-violet radiation where these reveal structures and phenomena not detectable with visible light.

Film material obtained in the course of research work can, of course, be used for

teaching. Usually, however, films will be specially made to fulfil the specific requirements of the lecturer.

It can be said that the best teaching film will be addressed to a specific audience, so that its contents can be based on previous learning and experience. It is quite fatal to expect a film to teach on its own. The reverse is true: a good lecturer will use a film as part of his lecture to help his exposition.

There are a number of quite distinct types of teaching films. The very short film shows how something moves, how it behaves or how it reacts. This film is used instead of the still lantern slide because movement is to be shown, and it is commonly termed the 'animated lantern slide'. Somewhat longer films, but nevertheless part of a lecture, are those which present a self-contained story. They may be a record of an experiment, of an operation or the presentation of a patient with a rare disease. They are used to enrich visual experience and to teach the interpretation of facts. In a separate group, although possibly of an equally restricted length, are the films which set out to teach a technique, the 'how-to-do-it' films. Films on how to give an injection, how to perform certain tests, or how to look after a piece of equipment are examples of this type of film. Animation with diagrams, drawings or three-dimensional models are frequently used to explain a difficult procedure.

Films which last twenty minutes or longer are usually only made to introduce a subject or to summarize it after it has been taught in greater detail by other methods. Introduction films can give a general survey or, in other words, a bird's-eye view of what is about to be taught. Most medical problems are affected by so many different factors and considerations, that the student tends to see the 'trees' but not the 'wood'. For instance, teaching about tuberculosis involves, amongst other details, consideration of how the disease is acquired, how it is recognized, how it is treated, how to protect the relatives of the patient, and so on. Each problem in turn requires the study of further factors. It is, therefore, a distinct help to the student to show him what he is about to learn, and, later on, how the various facts which he has now studied hang together and influence each other.

Finally, there is a somewhat indistinct group of films which may be used to foster an attitude or to change an existing one. Because the film can portray actuality, transport the spectator to different places, and show him events which have taken place at different times, this medium is ideally suited to present evidence or to transmit an experience which cannot be achieved in any other way.

The Institute of British Photographers as the professional association for medical photographers administers qualifying examinations and awards the Associateship to successful candidates, while the Fellowship is reserved as a distinction for significant contributions to the application of photography in Medicine. The medical group of the Institute organizes an annual conference at which new techniques and applications are discussed. The Royal Photographic Society is a learned society, and its medical group concentrates on annual exhibitions and monthly lectures. Apart from its Associateship and Fellowship the Society offers the highest award in medical photography. The Bronze Medal, donated annually by the Royal College of Surgeons of England, the Royal College of Physicians of

London and the Royal College of Obstetricians and Gynaecologists can be awarded to anyone irrespective of nationality or membership of the Society. The first four awards have gone to France, Great Britain and the United States of America. The medical group maintains a free bibliography service, based on a growing punch card collection of well over 3,000 abstracts from the world literature. Anyone, in any country, can thus obtain information on published data which may be applicable to a specific problem in teaching or research.

The Scientific Film Association, through its medical committee, collates and disseminates information about medical films in the form of catalogues and critical appraisals.

Medical photography is well served by a number of journals. The *Journal of Photographic Science* and the *British Journal of Photography and X-ray Focus* include papers on the subject, while *Medical and Biological Illustration*, published by the British Medical Association, is wholly devoted to information on the techniques and applications of all forms of illustration to research and teaching in the medical and biological sciences.

The international standing of this auxiliary branch of medicine may be gauged by the fact that the Second International Congress of Medical Photography and Cinematography is to be held in Great Britain in 1963.

In conclusion, it should be pointed out that while photography can be and is of considerable value to virtually all branches of medicine, it is but one of a number of methods to be applied only when it is the most appropriate for clinical practice, teaching or research.

DISCUSSION

THE CHAIRMAN: Our lecturer has very kindly said that he will be pleased to answer any questions you may care to ask. Also, anyone is at liberty to give his views, so the meeting is now thrown open for discussion.

If no one rises spontaneously, I shall exercise the Chairman's privilege and pick on a victim! Would Dr. Mac Keith please say a few words?

DR. R. MAC KEITH: All of us realize what talent and experience our lecturer has brought to this historic room tonight. The presentation was remarkably lucid and it covered the ground in a way which struck me as being quite complete. I have no knowledge of the technical side, but I am deeply interested in the uses of photography and I cannot imagine how the presentation of the subject of the uses of photography in medicine could have possibly been done better. I should like to express my deep appreciation of the excellent way in which this subject, which to us in medicine is most important, has been presented tonight.

THE CHAIRMAN: There is a question I should like to ask. After the war I was very interested in trying to experiment with new methods of medical education. It appeared to me that one of the best ways of teaching biochemistry and metabolism would be by a kind of Mickey Mouse animated cartoon. You could have enzymes as gnomes twisting NH₂ groups, and things of that nature. When I went into that, it was so expensive that it was quite impossible. I should like to ask our lecturer whether there is any possibility of developing that kind of thing at a reasonable cost?

THE LECTURER: I am not sure that there is an easy answer to this. Even the now very affluent television services present animation to us in a greatly simplified form, presumably because they, too, find it very expensive. The use of models—possibly

some of them magnetic so that they can be moved from behind the scenes—may be a simpler answer than actual drawings where each individual phase of a movement must be expressed in a number of pictures. If it is a sound film it must be projected at twenty-four pictures per second, therefore you may well find you need twenty-four different pictures for just one second's viewing on the screen.

THE CHAIRMAN: Dr. Bishop, you must find this very useful in the subject of endocrinology. Can you tell us anything about it?

DR. P. M. F. BISHOP: Yes, Sir Charles. I hope I am one of Dr. Engel's best customers. His service is of very great value indeed in the work I do. The problem for people concerned with my subject is really to some extent like stamp collecting. The great art is to recognize the clinical condition, and here I think the photographer helps us tremendously in our teaching. We are trying to develop a photographic library of various endocrine disorders, and I believe this is certainly the best way of teaching the student, because he can then look through a list of ten or twelve patients suffering from the same condition and get what the condition really looks like impressed on his mind, whereas if he comes to the out-patients' department he may be very lucky indeed if he sees one example of such a condition. I feel that in clinical endocrinology medical photography is extremely helpful.

MR. E. A. MARLAND: I should like to ask if there is any college or teaching body which gives a comprehensive course of instruction in medical photography, taking the subject right through from the still up to ciné-film, including colour and black and white—everything which would be of value to the medical man?

THE LECTURER: There are a number of departments in London and Manchester particularly where students who have already qualified in photography as such are taken on an individual basis. Apart from those, there is a body called the London School of Medical Photography, to which some seven separate departments belong. It is a charitable organization—the teachers are not paid—which takes students who, again, have qualified in photography. It systematically takes them from one department to another, where they are not treated as apprentices but as students, and they learn the different applications of photography to medicine. They are given courses in anatomy and physiology and at the end of the course they sit for the final examination of the Institute of British Photographers, which is a specialist examination qualifying them in medical photography.

So at the moment there are two courses open, either on the apprentice scheme system or somewhat more rapidly as students of that school.

MR. PETER DAVIS: Could you explain a little further what you meant by a kind of dam-busting technique of lighting?

THE LECTURER: Having run out of visual aids which I can project, I really need a blackboard to explain this, but in principle it works like a range-finder. If you have two lights emitted from two different places and you angle them in towards each other, they are bound to meet somewhere. You can pre-set the lights by predetermining the distance at which they will meet. That is correlated to the distance from the lens of the camera to the back of the camera, so that any object in the plane at which these two meet will be in sharp focus. It is a very accurate way of establishing the distance from the lens to the object because, even if the lights are only quite a short way apart, it is quite sufficient to separate the two beams by moving the camera slightly towards or away from the subject.

Therefore, by that method it is possible to obtain repeated records of very nearly precisely the same scale to make comparative measurements.

MR. DAVIS: Are the beams fairly sharply focused?

THE LECTURER: If you are familiar with an ordinary galvanometer light, it is of

that sort of order, and you can use correcting lenses to focus the beam to project an image of the filament of the bulb itself, so you have a really bright light on the subject.

MR. DAVIS: Do you get temperature troubles?

THE LECTURER: No, because the light is not on for an appreciable length of time. In any case, you can use reflectors which are coated with an interference filter, which reflects the visible light and absorbs all the infra-red.

DR. PETER W. MUGGLETON: I imagine that photography has very considerable application in forensic medicine. I wonder if the speaker would care to comment upon the particular presentation of photographs for legal use.

THE LECTURER: I indicated this particular part of the subject with the hyoid which you saw, and the magnified end part which was somewhat abraded. The courts in this country tend to be especially fair to the defendant, as we know, and therefore it is assumed that the camera can lie even if it does not necessarily do so. Whoever takes a photograph must be prepared to stand up in court and swear that he took the photograph and that he knows no one has interfered with its preparation. He must also be prepared to answer the defence counsel in cross-examination. It is therefore essential that when a photograph is taken, which may conceivably be used in court, all the facts which have influenced the taking of that photograph are put in writing at the time. The photographer should not have to say he thinks he can remember the facts. He should be able to say that he made a note of the camera angle and the distance and that he used a lens of x inches focal length. Such data are important because these factors may introduce distortions which can affect the value of the evidence so presented.

Of course, in American courts the projection of colour slides is quite usual and can, if used carefully, give everybody at one and the same time a general impression of what the scene of the accident or crime was like. Also, they may project maps or the layout of a house, and so on. However, in this country evidence tends to be passed from one juror to the next and each will form his or her own impression.

In Australia even a film has been used as evidence of how it was possible for a car to crash under certain circumstances. It was not a film of the actual accident but a reconstruction, so that, as it were, visual experience was brought into the court. To my knowledge that has not been attempted in a British court of law.

THE CHAIRMAN: I am sure you would wish me to thank our speaker for his wonderful lecture, into which has obviously gone a great deal of work, both in the preparation of the manuscript and in the selection of the films and illustrations.

The American scientific attaché at the Embassy told me that he had the job some time ago of going to Manchester to find out if there were any relations there of the man who first used microfilms. He found a descendant of that gentleman who flourished in about 1850 and awarded him a medal. That seems very nice, but I think it even nicer that our lecturer will not have to have that done for him. I am quite sure that he has already received medals and will receive many in the future.

The vote of thanks to the Lecturer was carried with acclamation, and the meeting then ended.

III. PHOTOGRAPHY IN EDUCATION

by

MARGARET F. HARKER, F.I.B.P., F.R.P.S.,

*Head of the School of Photography, Regent Street Polytechnic,
delivered on Monday, 20th March, 1961, with Hugh A. Warren,
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London Technical College, and a Member of Council of the
Society, in the Chair*

THE CHAIRMAN: We are to have the pleasure this evening of hearing the third of the series of the present Cantor lectures on Photography. Perhaps some of the younger members of the audience may remember Miss Harker in other ways. They may have read her booklet in the Careers series, *So You Want to be a Photographer*. Others of us, I am sure, have been interested in her book, *Photography in Architecture*, including perhaps some of the beautiful examples we see round the wall tonight.

The following lecture, which was illustrated by lantern slides, was then delivered.

THE LECTURE

It is indisputable that the twentieth century is most remarkable for the progress and achievements which have been accomplished on many fronts. In spite of wars, rumours of wars, and unsettled conditions in many parts of the world, we should feel privileged to be living at this time.

In the whole range of human activity and endeavour, no field has expanded so rapidly or with such far-reaching results as the field of education. It is not so very long ago that in most parts of the globe only the rich, mostly land-owners, and the priesthood could read and write or lay a claim to education of any kind.

In this country the industrial revolution and the establishment of the middle classes wrought a fundamental change of outlook in our society, and a greater part of the population demanded education than heretofore. Gradually a system of general education was established and then broadened and lengthened, until at the present day the school-leaving age stands at fifteen, and is likely to be raised to sixteen in the comparatively near future. The opportunities for further and higher education are increasing rapidly, and are available to all who wish to take advantage of the very considerable facilities offered, irrespective of position or means. We have a system now in this country which can be said to cover the Seven Ages of Man, beginning with the nursery schools, extending through the primary and secondary schools to the technical colleges, the colleges of advanced technology, and the universities. Nor does it end with qualification and graduation, for after this important level has been attained there are plenty of opportunities for teacher-training, post-graduate courses, and courses for the study of management and administration.

The extraordinary development of mind which has taken place since the establishment of science and its disciplines has been made possible by the opening up of

education and has led to the stupendous scientific achievements of our present era. In turn the discoveries, including Photography, made by scientists, and the consequent opening up of communications throughout the world has led to the great force of mass education conducted through the media of newspapers, periodicals, the radio and television.

From earliest times the value of pictorial illustration as an aid to learning has been recognized. In previous centuries, when education as we know it to-day did not exist, pictorial illustration was used to communicate information to the illiterate, who, though they could neither read nor write, were able to absorb information and instruction through this medium. During the latter part of the nineteenth century the potentiality of the newly discovered medium of photography was speedily recognized. Improvements in materials, procedures and design of cameras and other equipment necessary for the photographic process soon proved without doubt the great value of photography as the ideal recording medium. Taking for granted the skill of the operator, fine detail can be reproduced more accurately in far less time than by any other procedure. One photograph can be taken rapidly after another, so showing a sequence of events or a changing set of conditions, whereas the painter or draughtsman has to distil from several conditions one which is representational rather than actual at one moment of time. It is this unique property of photography, making possible as it does the recording of phenomena at an instant of time, which makes it such an invaluable tool to the astronomer, the physicist, the research scientist, and those engaged in education.

Information conveyed pictorially is more readily absorbed and can leave a more lasting impression on the average individual than the written word. The spoken word may have greater impact at the time but is not always so easily retained as the visual image. More information can be communicated through six carefully chosen photographs in which the subject content and its portrayal has been skilfully selected than through pages of writing, and perhaps the most important factor of all is that there is no language barrier. Photography, in all its many applications, is the most powerful medium for communication between people in the world to-day.

Photography in education has many ramifications and can take a variety of forms, some of which are not always obvious to the teachers or the education authorities. For instance, the potentialities of the use of original photographs for display in lecture room, corridor, and recreational centre, are not realized. The cultural value of the more aesthetic branches of photography has not yet made an impact in educational spheres. Paintings and lithographs are used fairly extensively for this purpose in schools and colleges (photography being used in the reproduction of the paintings, as it is usual to display the works of an eminent artist rather than that of the unknown, unrecognized painter). One rarely, if ever, sees photographs decorating classroom or hall. Industry and the professions, however, make considerable use of the medium in this way, either for prestige purposes or the dissemination of information, and it is quite a usual thing to see photographs displayed on the walls of the offices of engineers, architects, and industrialists. It is not always appreciated that big enlargements can be made for this purpose and that these can be in colour or in monochrome, or in colour transparency form.

illuminated from the rear. Only examples of really good photography should be used in this way, particularly where it is being used for educational purposes, and only work produced by qualified professional photographers is acceptable in this context. The Institute of British Photographers, the body which represents professional photography in this country, keep a register of members, and authoritative advice and information can be obtained from the headquarters of this organization at 38 Bedford Square, London, W.C.1, regarding all aspects of professional photography.

Probably the oldest form of photography in education is book illustration. To-day most books which are of an educational character contain photographs, whether they be concerned with the sciences or the arts. Subjects such as geography, geology, archaeology, natural history, biology, and physics, to mention only a few, are the more readily absorbed when the verbal content is illustrated by photographs. Unfortunately the standard of these illustrations varies greatly from the very good to the very bad, depending on the knowledge of the editor pertaining to standards of photography and the source from which the illustrations are obtained. Too many indifferent amateur photographs are used in book illustration, and from these poor illustrations misleading impressions can be created in the mind of the student. Turning to the popular type of educator or liberalizer, there is probably a greater demand for the travel book than for any other. These depend on visual impact as well as on verbal imagery for saleability, and contain a higher proportion of photographs than any other book. The best of these books give enough information on terrain, habits and customs, architecture and ways of life to stimulate in readers a search for knowledge by direct experience, and it is generally recognized that one of the principal objects of education is to stimulate a desire for further knowledge and experience.

Photographs are used extensively to illustrate magazines, journals, and daily newspapers, and many professional photographers are employed in making such illustrations. All these illustrations have a bearing on mass education in current affairs, popular science, art and culture. The press photographer is a familiar figure to the public. He has to get his picture, no matter what conditions are like, and many are the times a press photographer risks his life to get his photograph. The most skilled of these photographers produce epic pictures, with high dramatic content, often superbly composed under dreadful conditions. The outstanding press photographer develops a sixth sense, and can sum up a situation in the twinkling of an eye. His camera becomes part of him, and this facility combined with a sense of perfect timing accounts for some of the best photography produced. The photographer-journalist is a near relation and uses photography as a language in place of the written word. He produces a series of photographs to illustrate a particular theme and usually works on an assignment, such as the teaching of deaf and dumb children to communicate with others effectively. One such series depicting ways of life in the Far East was recently carried out by Henri Cartier-Bresson, the celebrated photo-journalist. Cartier-Bresson is world renowned and has travelled in all parts of the globe taking photographs for magazines, newspapers and books. His work has documentary and social significance, and along with the



[*Douglas F. Lawson*

One seed of plane tree (magnification $\times 11$)

photographs of other photo-journalists will provide valuable visual documentation on the structure of society, national characteristics, international affairs, economic conditions and the habits and customs of our times for posterity.

Technical and scientific book illustration requires an altogether different approach and is undertaken by commercial, industrial, medical and natural history photographers. The field covered is very wide, from the illustration suitable for a book on marine biology to those intended to show the shaping of hot steel. The quality of a photograph used for the purpose of technical illustration must be really good, and the skill and knowledge demanded of the photographer is very considerable. Good photographic quality in illustration is by no means appreciated as it should be, for it makes all the difference to the understanding of the subject illustrated and the information which can be gained from the photograph. Too often it is taken for granted. Paradoxically, bad photography is accepted surprisingly frequently. This is probably because the editor in the first instance, and later the



[Douglas P. Wilson]

Free-swimming larva of the bottom-crawling sea urchin, Psammechinus miliaris (magnification $\times 80$; photomicrograph by electronic flash)

student, does not stop to analyse the reasons for the accurate, informative picture of the subject which the illustration gives him nor why he finds it difficult to extract the necessary information from a photograph. He is only concerned with the subject and not with its presentation. But for the very reason that he is concerned with the subject he should appraise its presentation. This is something which would be welcomed by photographers, for appreciation always spurs people on to produce even better results next time, and an indication that certain photographs have shortcomings as illustrative material has the value of keeping the photographer up to the mark.

Book illustration as an aid to study is most suited to private, individual study rather than the class room. At one time the epidiascope was very popular as a visual aid, but the inconvenience of holding a heavy book before the projector was soon realized by long-suffering lecturers, and a more efficient form of presentation—the film strip—has largely taken its place.

The projection of a still picture on to a screen so that it is clearly visible to all members of a large class is probably the method of visual communication most popular with teachers. The photograph projected can be in the form of a lantern

slide or a filmstrip. Taking into consideration the whole range of primary, secondary and further education, the visual aid most frequently used is the filmstrip. Most of the better projectors on the market can be adapted to project either slide or strip, and certain projectors have been designed specifically for the presentation of filmstrips. According to the size of the room, the size of the screen on to which the image is projected and the focal length of the projector lens, this visual aid can be used for a small group of students or a large class.

Filmstrips can be obtained in colour and in monochrome and all are produced through the medium of photography. The material used for the content of filmstrips will include diagrams, charts, drawings, paintings and original photographs. All the material is collected, adjusted and placed in order, and sent to the photographic laboratories where it is photographed on 35 mm. film and the film processed. As many copies of the strip as are required can be made from the master negative.

The truly remarkable growth of the filmstrip as a visual aid since the war is indicated by the number of associations and firms who produce filmstrips. In the G.B. Film library alone fourteen professional organizations who are filmstrip producers are represented, five hundred and twenty-eight titles are listed and with most titles comprehensive teaching notes are provided. The production of each filmstrip is supervised at each stage by a subject specialist and a practising teacher. Filmstrips are available for purchase only, they cannot be hired, but it is usually possible to have a preview on a sale or return basis. They can be obtained either from the commercial organizations' film libraries or from the Educational Foundation for Visual Aids, whose present headquarters is at 33 Queen Anne Street, London, W.1. There are two organizations within this organization and they are established on a non-profit-making basis. The National Committee for Visual Aids is responsible for the gathering together of suitable material for filmstrips and films through the local education authorities and teachers' groups, who investigate suitability of subject and material. This Committee is also responsible for the production of films and filmstrips, which is invariably undertaken by professional photographic film units and laboratories. The Educational Foundation for Visual Aids is the distributive side of the organization, and also operates through the local authorities. Films and filmstrips can be obtained direct from the Foundation, but they can also be obtained from the local education authorities' film libraries, which are kept well stocked and work on an interchange basis. There are approximately forty of these libraries throughout the country.

Filmstrips can be classified in one of three categories:

1. Analytical. This type analyses a topic by taking a pupil picture by picture through the stages of a lesson.
2. Synthetic. In which case carefully selected photographs compare and contrast for example the seasonal activities of animals and plants.
3. The Background or Reference Filmstrip. This is intended to provide a teacher with a wide selection of pictures with which to illustrate a lesson.

The advantages of the filmstrip over other visual aids are its compactness for storage purposes and its convenience in use. A still picture can always be kept on the screen for the length of time necessary to enable the slowest pupil



John Markham

Short-tailed vole

to study it in detail. A picture which has been projected can be returned to the screen for re-examination at a later stage with the minimum of trouble without any risk of the sequence being thrown into confusion for a showing at a later date.

As far as photographic quality is concerned the filmstrip cannot compare with a really good lantern slide. This is because lantern slides are produced individually and directly from original negatives if in monochrome. 35 mm. colour transparencies are invariably used if the lecture is to be illustrated with colour photographs. Excellent duplicates can be made if required. In education in photography the lantern slide is the most usual form of visual aid and is prepared by the lecturer himself. Also, lectures given before adult audiences for educational purposes are frequently illustrated with slides. The advantages of slides as visual aids are that they are of superior quality, photographically speaking, and they can be arranged and re-arranged in various sequences to suit different lectures. Any

*[Eric Hosking**Barn owl with field vole*

one slide can be selected from a lecture set and inserted anywhere into another lecture set.

A visual aid which is being given increasing recognition is that which is produced by cinematography—the documentary film. Films produced for educational purposes cover an astonishing number and variety of subjects and are normally hired from a film library rather than purchased outright. In the G.B. Film Library films portraying 600 different subjects are available to meet usual educational requirements. The demand made on the Foundation for Visual Aids through their film library at Weybridge last year is indicated by the number of hirings of film, which amounted to one hundred and sixty thousand. Film production is undertaken by film units who are engaged on specific projects, and there is an arrangement for the interchange of films with other countries organized by the Foundation. Film as a visual aid probably has greater application when large numbers are involved than with a small intimate group. It is particularly valuable in technical education. In no other medium is it possible to reveal operational machinery so that methods can be studied and evaluated, and flaws, if any, detected. Movements of animals, birds and people as well as machinery can be studied in detail through the visual analysis of high-speed cinematography, which reveals very quick action in slow motion. At the other extreme by time-lapse cinematography techniques it is possible to study growth in plants and cellular structures, to mention two subjects only.



[Eric Auerbach

Mental home

This process speeds up activity which is normally too slow for the eye to observe through the natural process of vision. Without doubt film is one of the most vital communication methods, revealing as only this medium can do the routine of procedures and processes.

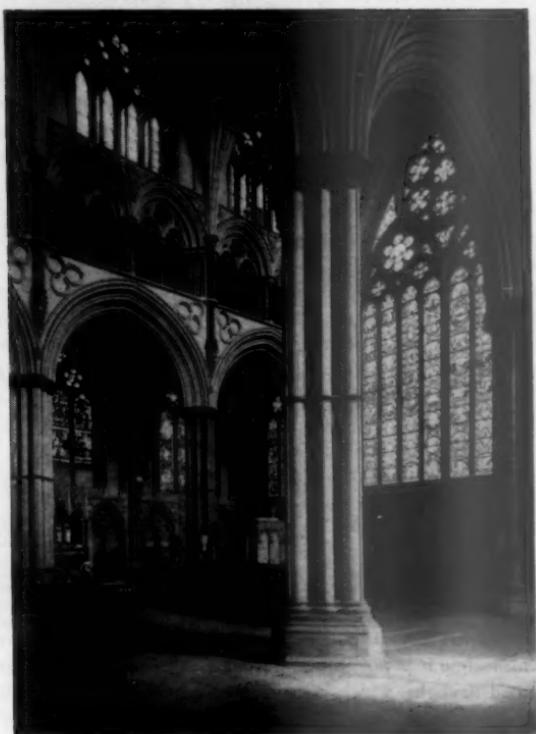
Broadly speaking, films for further educational purposes can be classified into five categories, which are: 'Background' films, including those which have socio-logical associations; instructional films which put over facts, processes and the use and application of apparatus; illustrative films which show some scientific or industrial practice; scientific films which deal with theoretical aspects of a subject; and general films including safety, welfare and industrial administration. Film is an invaluable teaching aid for the student of medicine and biology, as well as being an essential research tool in these subjects. Films of surgical operations and many other medical practices are made by medical staff photographers in the big teaching hospitals, and their units are usually well equipped to deal with the requirements of surgeons, physicians and research scientists for teaching as well as for recording purposes. The same system applies to the scientific research establishments. A number of colleges of technology have their staff photographer who is responsible for providing visual aids for use in the college, and for documenting and recording whatever is

required by the lecturers and college authorities. The universities have been slower to use film or indeed any form of visual aid than technical colleges and schools. This is probably due to the special requirements of film for use in universities. This factor reduces the number of films available which are satisfactory as an aid to study, many of them being too generalized to fulfil university specifications. For this reason university authorities find it necessary to have their own material produced to suit their needs. Also, more emphasis is placed on communication through the medium of the written word than on the visual image at this level of education. At the post-graduate level, considerable development has taken place to provide courses in management study and business methods and film is an invaluable aid in this sphere. In one instance alone, time and motion study can be assisted by the projection of film which reveals the pattern of movement of hands in the execution of a routine task by strapping lights on to the wrist or other part of the arm or hand, and recording the movements on film. Improved efficiency and elimination of wastage of effort and time can be effected through analysis and careful study, frequently aided by film and photographs.

The disadvantage of film as a visual aid is the expensive and specialized equipment needed to project the film, particularly if sound is incorporated; and it does not always meet individual needs and must of necessity be generalized rather than specialized. (Of course, in the cases where staff photographers are attached to colleges this is discounted.) But on the whole the disadvantages are heavily outweighed by the advantages.

Mention must be made of the newer forms of visual aids, each making use of photography. The overhead projector has become very popular in the United States. It is not yet manufactured here, but it should be available in twelve months time. In the meantime it is possible to purchase an American projector. This can be used in broad daylight, which is a great advantage, allowing students to take notes without any difficulty, and avoiding the necessity of curtailing ventilation as well as daylight. The lecturer can remain seated whilst operating the projector, and moreover can face his class so that he can observe reactions and adjust his lecture accordingly. The projection allows the display of a variety of material including slides as well as transparencies of larger format. It can be used like a blackboard, the diagram or other illustration being committed to sheets of transparent plastic with a grease pencil. A building up of a composite image can be effected; likewise the lecturer can unmask the projected whole image to disclose information analytically or constructively.

The potential of television has been realized as a medium for conveying information and instruction to primary and secondary school children through the day-time schools' programmes. These programmes are as popular with adults as they are with children. Closed circuit television is yet another visual aid which is gaining prominence in the technical colleges and can be used to demonstrate in 'close-up' details of processes and procedures to a large group of students, which to date have had to be repeated many times in order that all may see. It seems safe to assume that closed circuit television will gain considerably in popularity as a visual aid in the future, and many and varied are the uses for it in education.



[Margaret F. Harker

Angel choir, Lincoln cathedral

For those who wish to learn about visual aids there are courses available organized by technical colleges. These courses are designed to help teachers make more effective use of visual aids and to promote the proper care and maintenance of expensive equipment. It is not readily appreciated how enormous this field is, how widespread and how complex in organization and distribution. As has already been stated, there are many commercial organizations which produce and market visual aids and equipment. Then there are the national organizations, such as the British Association, which is particularly concerned with the use of film in connection with science and research, which have film libraries. Mention must be made of the International Scientific Film Association, which does much valuable work in reviewing and evaluating films for educational and other purposes. The Institute of Education, University of London, numbers amongst its lecturers Mrs. Helen Coppen, whose subject is teaching with visual aids. The work of

Greenhill and Carpenter of Pennsylvania University, U.S.A., is monumental on the subject and most impressive in its details of research into this method of communication since 1949.

Photography has other uses in education quite apart from its major application to visual aids. Certain aspects of engineering and applied physics employ photography as an essential part of the procedure for the recording and retaining of information. For instance, photogrammetry and cathode ray oscillography use photography as part of the routine and to finalize results. For these purposes photographic equipment is used by lecturers and students. A small hand camera is a most useful tool to the student of architecture; he uses it for recording purposes and as an aid to memory. On the aesthetic side, certain colleges of art include photography in the curriculum as a subject ancillary to a course in design, regarding it as a medium for aesthetic expression.

Looking into the future, it is possible to visualize the inclusion of photography in the curriculum at secondary school level as a subject which can be taken as an alternative to art. Already many schools have camera clubs or photographic societies on an extra-mural basis, organized by enthusiastic teachers. One of the major problems is the serious lack of properly trained teachers of photography. There are plenty of enthusiastic amateurs, but this is not the same thing.

Mention has been made of the importance of the use of good photography in education, and education in photography in this context must not be overlooked. As the demand grows for men and women who are properly trained and qualified as professional photographers, so does the Council of the Institute of British Photographers seek to establish the profession with standards which are worthy. An examination system has been established since 1943 on a very sound basis, and certain general educational requirements will come into force this year which must be met by the candidate who wishes to offer himself for examination. Certain schools of photography which operate within the framework of technical college or college of art have been recognized by the Institute as providing education in photography at levels which are considered to be satisfactory. Six schools or departments of photography have gained exemption from the preliminary examination in respect of their sessional examination, four have gained exemption from the intermediate examination, and one satisfies the requirements for exemption from the final examination. The successful candidate in the final examination is admitted to Associateship of the Institute after two years experience as a professional photographer. The most satisfactory form of education in photography is attendance at a recognized school of photography for a full-time day course lasting three years. Part-time day release courses are available to those already in a photographic establishment as trainees, and vocational evening classes are available in several districts.

The Royal Photographic Society exercises a benign influence on standards in photography and is primarily concerned with the advance of photography in all its scientific and aesthetic applications. The membership consists of photographic scientists, professional photographers, serious amateur photographers and others who are interested in the work of the Society. Members can apply for Associateship

and Fellowship in any of ten categories, one of which is work on photography of an educational character.

The importance of good photography in all fields where photography with a purpose is used cannot be too strongly emphasized, and it is only by the establishment and maintenance of standards, and the provision of sound and suitable education in photography, that a universally high level of photography will be achieved. It is only through the dissemination of the right information to cultural organizations and users of photography that the profession of photography will come to be recognized as being something very well worth while and in the interests of the community as a whole.

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D I S C U S S I O N

THE CHAIRMAN: We have heard a most remarkable, and I am sure you will all say, delightful, lecture from Miss Harker. Its title was 'Photography in Education', but it is a tribute to the quality of the lecture that for many of us it was also an education in photography. As a member of the Crowther Committee I seized on certain of her words near the beginning. Miss Harker affirmed that the school-leaving age would in the near future be raised to sixteen. If that is so, not only must there be an increase in the number of teachers, but they must be enabled to work more effectively, and she has described one of the media which will achieve that.

I am sure you are all digesting the great amount of material that Miss Harker has put before us, but just to start with a question—it has appalled me to think that the normal method of demonstrating mathematical work to students is still substantially the same as was used by the Greeks some two thousand years ago, a piece of white chalk on a blackboard. Various methods have been put out from time to time to try and make that easier, to relieve the teacher both from the labour and the dust, but none of them ever seem to have got far. Have *you* got any method up your sleeve, Miss Harker, based on photographic or optical principles, which will enable me to work out some theory of structures in mathematics, without the hard slog of chalk and blackboard?

THE LECTURER: I have personally nothing very much to offer you, Mr. Chairman, but I did mention towards the end of my lecture that in America recently there has been produced an overhead projector which, I believe, probably would help considerably in this particular sphere of mathematics, whereby the lecturer can sit conveniently placed at a table such as you are sitting at now, with the illuminated projector or table in front of him, and he can use the surface of that as a blackboard, using special pencils and materials. The theory is displayed by means of mirrors and lenses on a screen over his head, so that the audience can see this quite easily. I think that this display method is one which will gain in popularity in the schools and colleges, particularly for subjects such as mathematics where diagrams are required and chalk and formulae have to be displayed. Instead of having to reach up to a blackboard to do this it will be possible, by using an overhead projector, to face the class, which in itself has very great advantages.

I prepared some slides to illustrate this visual aid but there was no time left in which to show them.

MR. C. GURNEY BURGESS: I am an architect. I have found from experience that many professional photographers take beautiful photographs in the studio, but when it comes to architectural subjects the results are not so gratifying. Some photographers seem to fail when it comes to the photography of architecture. Is this because of the students' approach? I should like to ask Miss Harker if the students, in their education in photography, could learn more about the depth and character and texture of buildings to bring these out in photography. I wonder if she would agree.

THE LECTURER: That is a very interesting question to me personally, because I am particularly interested in architecture and architectural photography, and have been for many years.

I think I agree with you up to a point; not altogether, because there are certain photographers who do produce some very magnificent work. I think there are things that many photographers do not really appreciate when it comes to a subject such as architecture. For instance, they do not always appreciate the fact that it is necessary to show perspective and scale and a building in its setting. I think that frequently they go too close to the subject and do not show any of the surroundings. Architects may feel in some instances that this is so. I have heard this as a certain criticism.

As you have already said, there is not probably enough appreciation of texture and surfaces on the part of photographers. I hope this is something that will be overcome in the future. In the school of photography with which I am connected we do put emphasis on acquisition of some knowledge of the subject to which photography is applied, for study of technicalities and terminology related to the subject as well as ability in photography are vitally important to the photographer. This is something we are definitely attempting to do, so that any young person who hopes to be an architectural photographer will know something about architecture, its terminology, the requirements of the architect and so on, which I think personally are vitally important.

MR. A. LAMMER: I do not wish to utter a complaint, Miss Harker, but I wonder whether you would agree that architectural photography (while we are talking about it) could be given a little more life, in the sense that although some of the architectural photographs one has been seeing up to now are very beautifully presented, and one can see exquisite examples of technical masterpieces of photography, so often, I feel, the life is lacking that one normally comes across in these places. I should like to see more photographs taken by available light, now we have emulsions that can do that, and showing people in these places as well.

THE LECTURER: Again that is an interesting question to me personally. It is always rather a tricky one, however, because there are several aspects to it. I should say that architects in general would welcome this suggestion, with reservations. I think photographers in the main are tending to do more of this and to include people in the picture area, but a word of warning should be uttered here. For example, in the cathedrals and places which you have seen illustrated this evening people could look very incongruous unless they were people or clergymen dressed in the right garb. I think it might be rather ungracious to have figures who were incorrectly dressed in such surroundings. You do find people in dress that is not very suitable to these places, walking about and admiring them. In a modern interior, which perhaps is rather more to the point, I think without doubt figures are a definite asset and are included by a number of photographers in these days. Perhaps they could be more used than they are.

Again, another note of reservation. If people are included they are sure to be dressed in certain fashions which will date that particular photograph. That may or may not be desirable.

There is another point, too, to which I should refer: you mentioned available light. Exposures required for interiors which are low in illumination are very long. That means the people who are in the interiors have to pose and that gives rather an unnatural result. In a modern interior it is rather different; there is plenty of light, and with modern speed emulsions using artificial light as well it is possible to obtain excellent photographs, with people suitably displayed in various parts to add the human touch, which I agree is very necessary in many instances.

MR. N. K. HARRISON: Miss Harker mentioned that the school age would probably be lengthened or raised, and the Chairman more or less confirmed this. If photography is of such value to education, as Miss Harker has made out, is it not possible that you can teach a child more by a greater use of photography than you are doing at present, thereby avoiding the need to increase the leaving age as has been suggested?

Alternatively, if you are going to increase that age from fifteen to sixteen, is it not possible to teach them more in the same time by increasing the use of photography?

Arising out of that I should like to ask, if photography is of such value in education, whether anything is being done at the present time to impress this on our teachers?

THE LECTURER: I think that we have to remember that the average human brain develops at a certain rate, and that however much we do to improve visual presentation of facts—and I believe that for most people it is easier to absorb facts visually than otherwise—the development of the individual will proceed probably at the same rate as before. Therefore, in my opinion, although visual aids are used more frequently in illustrating points in lectures and in classrooms, I do not think that that will necessarily increase the intelligence ratio of young persons, though they may be able to retain facts better. If the school-leaving age is raised to sixteen that will bring a greater number of youngsters within the possibility of taking G.C.E. O-Level examinations, but I do not think the more extensive use of photography or visual aids is going to alter the intelligence ratio.

As to the latter part of your question, I should say there are comparatively few colleges in this country putting on courses in visual aids at the moment. We are considerably behind America in this respect, to judge from what I have learned from talking to people when I was out there and from meeting people who have been there. The general consensus of opinion is that the Americans make far greater use of audio-visual aids than we do at the present time. In this country there is a reluctance on the part of educators to use visual aids to a greater extent. I think, however, this prejudice will be overcome. As you say, it is necessary to encourage teachers to use these visual aids and to use them correctly and learn something about them. That is probably best done by putting on courses for people. There are certain technical colleges doing this, and I think there will be more in the future.

MR. J. SHEPPARD: The Glamorgan Educational Authority does in fact run a Summer School for teachers, and photography is one of the subjects that Glamorgan offers. Other educational authorities might also run similar Summer Schools.

Miss Harker mentioned earlier on that she thought professional photographers should do more in illustrating in the classroom, that there should be more use of the photographs taken by professional photographers. I feel that if, for instance, at a secondary modern school they had a group of their own who took photographs, the children would get more benefit by taking the photographs themselves. They would, whatever the imperfections, see the results of their own efforts and perhaps learn more that way.

THE LECTURER: You have raised an interesting point. There is a lot to be said for both, really. What I deplore at the present time is that so little use is made of photography in this respect. You see reproductions of paintings on classroom walls, but

you seldom see photography. It is used by industry very considerably in this way for display purposes.

I think that youngsters could benefit considerably by taking photographs and then displaying them and learning from them, much in the same way as art classes function. I believe, as I mentioned earlier, that the educational authorities will come to a stage where they will consider photography as an alternative to painting and drawing for young people, as a medium of expression for those who have not the ability to paint and draw.

THE CHAIRMAN: Ladies and Gentlemen, in conclusion of this evening I am sure you would like me to express to Miss Margaret Harker our most sincere thanks, not only for the excellent delivery of the lecture but for the selection and working up of all the delightful illustrations that she showed us. It is not for nothing that Miss Harker is a past President of the Royal Photographic Society and, as we are proud to remember, also a Fellow of this Royal Society of Arts.

The lecture will be printed in the Society's *Journal*—not, I fear, with all the beautiful illustrations, but possibly with some of them. You may like to follow it up there. Would you please reinforce my vote of thanks in the usual manner.

The vote of thanks to the Lecturer was carried with acclamation, and the meeting then ended.

THE COMMONWEALTH ASSOCIATION IN THEORY AND PRACTICE

The Sir Thomas Holland Memorial Lecture by

J. D. BRUCE MILLER, M.Ec.,

Professor of Politics, University of Leicester, delivered

to the Society on Thursday, 13th April, 1961, with

K. B. Smellie, Professor of Political Science, London

School of Economics and Political Science, in the Chair

THE CHAIRMAN: The Sir Thomas Holland Memorial lectures are given by reason of an endowment of Lady Holland in memory of her husband, Sir Thomas Holland, who was Head of the Geological Survey in India, and a Member of the Viceroy's Council for Industries and Munitions during the First World War. He was also a Member of this Society's Council for many years.

Professor Bruce Miller is not a geologist, but he has always dealt with fundamentals. He was once a student of mine. He came from Sydney in about 1952. There he had done basic politics and sociology; the old world had swum into his ken, and he decided that he could not stand silent on a barrier reef in the Southern Hemisphere, but must come and investigate. I do not think he will mind my saying that the subject of his investigation was to discover the precise connotation of the term 'deference' in English democratic political institutions, and it was my delight to discuss with him the possible connotations of the word 'deference'. I do not know whether he ever discovered these connotations in our society, but at least he has done one thing: everybody now defers to Professor Bruce Miller when he discusses the problems of the Commonwealth.

The following lecture was then delivered.

THE LECTURE

When we speak of 'theory' in connection with the Commonwealth, we can mean any of three things. First, a theory of the working of the Commonwealth, derived from a study of its behaviour; secondly, a theory of its constitutional framework, derived from authoritative constitutional documents of various kinds; and thirdly, a theory of how it should behave, of the ends it should serve. Presumably the first of these was not the only one the Royal Society of Arts had in mind when it gave me this subject, because, when we think of 'theory' in this sense, there can be no disharmony between theory and practice, if the theory is any good. A theory of the Commonwealth's behaviour must accord with the practice of that behaviour, just as a theory of animal behaviour must accord with the way animals behave; if it does not, it is no use to anyone. The Royal Society of Arts must have meant either the second or the third of the senses I have distinguished for 'theory', since both of these allow for some discrepancy between theory and practice, and my title does suggest that these two things are, in the case of the Commonwealth, distinct. Accordingly, I propose to examine Commonwealth theory and practice in those two senses—first, in the constitutional sphere, and then in the sphere of ends,

purposes, aims and obligations. In both these spheres we have had much discussion lately over the question of South Africa; so I propose to take a good many of my examples from the South African case, and to refer, wherever possible, to opinions expressed about it by politicians and the press.

When we look at the condition of constitutional theory in the Commonwealth, we are faced at once with a problem of definition. What is the Commonwealth? Do we mean by it the group of sovereign states which is to be reduced this year by the secession of South Africa and increased by the adhesion of Cyprus—a group which a state formally joins on becoming independent, the existing members having consented to its joining? Or do we mean these states, plus the British dependencies, such as Kenya, Uganda, the Gambia, Fiji, and so on? Do we think of the dependencies as parts of the Commonwealth, along with the sovereign states? The distinction is important; it is not just a distinction without a difference. The case for the second view is supported by formidable advocates—by Sir Keith Hancock¹ and Professor Nicholas Mansergh,² and more recently by Dr. K. C. Wheare.³ Their view, broadly speaking, is that there are various parts of the Commonwealth, some dependent and some independent; all have at some stage been included in the British Empire, and the Commonwealth is the present incarnation of the Empire; to suggest that the term 'Commonwealth' should be reserved only for the Member nations is, in the opinion of these authorities, to be unduly restrictive and also unhistorical. I have every respect for this view, but it seems to me to be out of date. Undoubtedly, the Commonwealth has grown from the Empire; undoubtedly, too, when the countries of what we sometimes call the 'Old Commonwealth'—Canada, Australia, New Zealand and South Africa—were achieving their independence, this occurred so slowly, and, indeed, insensibly that no one can say exactly when they achieved the dignity of sovereign states. They were in both Empire and Commonwealth together. But to-day things are different. We have now formalized the business of achieving independence; it occurs by a distinct Act of the British Parliament. We have also formalized the business of Commonwealth Membership; it is achieved by deliberate and public acceptance of the applicant by the existing Members. Achieving independence and becoming a Commonwealth Member are not the same; one is the gift of Britain, the other the product of the consent of all the Members. A colony might well be given its independence by Britain and fail to be accepted as a Member of the Commonwealth. What would happen then? Could we say it was in the Commonwealth? In my view, we could not. Even if it said that it wished to have the Queen as its Head of State, this would not make it part of the Commonwealth. It could not recognize the Queen as Head of the Commonwealth, even if she was its Head of State, because the Queen's position as Head of the Commonwealth derives from her status as the symbol of the free association of the Members. If the Members had rejected the country in question, they would obviously not be in free association with it. So, although it might share a Queen with the Realms in the Commonwealth, it could not be a Member and, in my view, it could not be said to be in any way within the Commonwealth—not even in the modified sense in which I would consider a present British or Australian dependency to be in the

Commonwealth, the sense of being in because its owner, the sovereign state Britain or Australia from which it was inseparable in law, was a Member.

My point is that, although in the past it might have been permissible to think of British colonies as parts of the Commonwealth, 'junior members', if you like, alongside the full ones, this is now unrealistic because the terms and conditions of membership have been so clearly formulated. We speak naturally of both 'joining' the Commonwealth and 'leaving' it. You cannot 'join' something you are in already; you can be advanced to senior membership, perhaps, but that, I am convinced, is not what the Prime Ministers do when they look at a new applicant. They look at the application on its merits. They will certainly do so if that mis-shapen object, the Federation of Rhodesia and Nyasaland, ever reaches sovereign status and applies for Membership; it would be unwise to assume that either courtesy towards the British Government or acknowledgement of the fact that a Rhodesian representative has attended Prime Ministers' meetings as a guest for a long time, will prevent careful scrutiny.

In the world of to-day, the change from dependence to independence is more than a change of degree; it is a change of kind. A country acquires a new dimension of operation when it achieves sovereignty and the right to conduct international affairs as an equal with other states. The state which joins the Commonwealth is a different sort of international being from the one that was prepared for self-government by Britain. It moves in a different atmosphere, has greater span and scope. This is why I prefer to think of the Commonwealth as an association of sovereign states, and not as a sort of steps-and-stairs combination of the former units of the British Empire in the various degrees of self-government. The Commonwealth is an international association, to be viewed along with the United Nations, and other such bodies. I am sure that is how all the post-war Members regard it; and that is how I shall deal with it to-day.

Now let me examine some questions of constitutional theory within the Commonwealth. I ought to say, perhaps, that I am using 'constitutional' in a rather loose sense; the Commonwealth has no constitution, properly speaking. It has only a number of understandings, decisions and conventions. But in British practice we are accustomed to treat conventional behaviour as part of constitutional activity, as witness the position of the Cabinet. It is in this sense that I look for issues which might form the stuff of constitutional theory in the Commonwealth. There cannot be many, because the formal constitutional relations between Members of the Commonwealth are confined to three things: their mutual recognition of the Queen as the Head of the Commonwealth, their obligation by custom to seek the approval of their fellow-Members to their continued Membership if they become republics, and their participation in the general system of Commonwealth consultation, which includes Prime Ministers' meetings, discussions at the United Nations, the High Commissioner system, and so on. I should like to look at theory and practice in regard to each of these.

There is no question that Members of the Commonwealth must acknowledge the Queen as Head of the Commonwealth. This was the symbolic means used in 1949 to continue India's membership of the Commonwealth when she decided to

become a republic. There is some argument about whether it is 'the Queen' or 'the Crown' which is the symbol of the free association of the Members of the Commonwealth; both terms were used in the communiqué issued after the Commonwealth Prime Ministers' Meeting in 1949,⁴ and people sometimes use them interchangeably. But Mr. Nehru went out of his way in the Indian Parliament to indicate that the transition in the communiqué from former allegiance to the *Crown* to recognition of the *King* by India as a symbol of free association, on becoming a republic, was deliberate;⁵ and when permission was granted to Pakistan in 1955 there was no mention of the Crown at all. It was the Queen who was mentioned as symbol and as Head of the Commonwealth.⁶ The distinction is important. In British terminology the Monarch is both a person and an institution; the Crown is solely an institution, the whole corpus of monarchical government. So it is understood here; so it was understood in India before independence. It was the King in his person that republican India accepted, not the Crown. How could it be otherwise? To have accepted the Crown would have meant accepting some, at any rate, of the overtones of government which have always accompanied that term. It is the Monarch alone, King or Queen, a symbol but not a function, that Members accept.

There are two matters arising from this, on which constitutional theory is dubious and will have to wait upon practice for its exposition. One is the problem of the succession of the throne; the other is that of responsibility for the Queen's utterances and actions when she is considered to be operating as Head of the Commonwealth and not as Queen of one of her Realms. So far as the succession to the throne (and the Royal style and titles) are concerned, the principal guide is the preamble to the Statute of Westminster, of 1931, which states that 'it would be in accord with the established constitutional position of all the members of the Commonwealth in relation to one another that any alteration in the law touching the succession to the throne or the Royal style and titles shall hereafter require the assent as well of the Parliaments of all the Dominions as of the Parliament of the United Kingdom'. This is a convention given the dignity of incorporation in a preamble; it is not enacted law. However, it was followed in the Dominions in 1936 when King Edward VIII abdicated, and again in all the Queen's Realms in 1953 at the time of Queen Elizabeth's Coronation. It is significant that on the latter occasion no action was taken by India, at that time the only republic in the Commonwealth. Presumably the Indian Government considered that it had no concern with an alteration which affected only the Queen's titles and not her person. But if there were to be any sort of dispute about the succession, or any wish to prevent some person from making a claim to it—as the notional children of Edward VIII were prevented in 1936—which Commonwealth Members would be consulted, and how would they make their intentions known? The Realms are in a fairly clear position: they can pass either statutes or resolutions to state their views on their own Heads of State. But the Republics and Malaya are hardly in this position, since the Monarch is unknown to their constitutions. A further question is what would happen if there were actual contenders for the throne, one backed by some Commonwealth Members and another by others. But this is

so unlikely that we can afford to forget it. What does emerge, I think, is that the position of Head of the Commonwealth depends very much upon the stability of the British Throne.

It also depends upon tact and forbearance on the part of the occupant of the throne. We still do not know what, if anything, the Queen can or should do in her position as Head of the Commonwealth. When she visited the Republics of India and Pakistan earlier this year it was said that she did so in her capacity as Head of the Commonwealth, since she has no other significance in the political life of these two countries. She made speeches in both. Some of those in Pakistan, which Indians thought expressed approval of the scheme of 'basic democracies', gave offence in India. Who advised the Queen to make those speeches? If it was the British Government, by what right did it do so? When in India in her capacity as Head of the Commonwealth, the Queen was not only there as Queen of the United Kingdom, but as Queen of her other realms as well—of Canada, Australia, New Zealand, South Africa, Nigeria and Ceylon. In constitutional theory, I do not see how her British position could be regarded as having any primacy in such a situation; she must have come as Queen of all her Realms and as Head of the Commonwealth. Did the British Government consult the other Realms? If it did not, but used the Queen as an expression of qualified British approval of the political system of Pakistan, this was, I think, an abuse of the Monarchy. If it did, then we cannot quarrel with it. But there is a further point. I have assumed so far that, while the Queen went to India and Pakistan as Head of the Commonwealth, her speeches and actions must have been advised on by someone in one or all her Realms, since it is an axiom of responsible government that the Queen performs her public acts on advice, with certain well-defined exceptions. But this assumption may not be true. The position of Head of the Commonwealth is susceptible of another interpretation. It could be argued that, when the Queen visited a republican Member of the Commonwealth, she shed her normal condition of being subject to advice, and assumed an element of freedom of action, appertaining solely to her position as Head of the Commonwealth and not present in her position as Head of State of her various Realms. One might argue that, in her relations with India, she could not be limited by advice from ministers in any of her Realms, since this would be to assume some primacy of those other Commonwealth Members over the Member which she was visiting, the ministers of which were precluded from offering her advice because she was not provided with a place in their constitution. In such a situation, it may be that the only solution is for the Queen to act on her own initiative. In theory, I think this argument is plausible. If we say that the Queen does something as Head of the Commonwealth, then either she is responsible herself for this something or a minister of some kind is; if no minister can be found, the responsibility falls on her.

I do not present this possibility simply as an exercise in misplaced ingenuity, but to show that there may be concealed ambiguities in the position of Head of the Commonwealth, and that these have not yet been settled. It is not surprising that the Queen seeks safety in general statements when she is delivering her Christmas message; if she took a clear line on anything, this might raise the question of who

was responsible for what she said. The more countries join the Commonwealth and the more republics there are amongst them, the more perilous will be the task of the Queen when she makes speeches on overseas tours.

Now let me turn to the second of the formal constitutional relations between Members of the Commonwealth, that of the need to ask permission to retain membership on becoming a republic. We have recently seen how this need became the occasion for discussion, at two Prime Ministers' meetings, of the *apartheid* policy of South Africa, and how that occasion led to South Africa's decision to withdraw from the Commonwealth. This particular provision arose because, when India brought forward her proposal in 1949 to become a republic and yet remain within the Commonwealth, a series of readjustments to constitutional theory became necessary. Before that time, it had been considered that both allegiance to the Crown and recognition of it as a symbol of the free association of the Members were inseparable from Commonwealth Membership. It was a very big step to state that allegiance and recognition were alternatives and not concomitants; this the Prime Ministers did, in order to retain India in the Commonwealth. They went in a body to give King George VI their collective advice about the proposition.⁷ The 1949 decision was a major step forward, and Indian application was essential for the step to be taken. But since then no new constitutional steps have had to be taken. Pakistan, Ceylon and Ghana made the same formal request, but it was treated as simply a matter of form; they followed in India's path. When South Africa made the request, it became an opportunity for an inquest into South African racial policy and the general fitness of South Africa to be a Member. No such experience had been undergone by the other applicants.

Of course, it can be argued—and would be by many people—that South Africa's conduct was so heinous that any opportunity should have been taken to attack her. This seems to me a highly unsatisfactory position. I agree with what Professor Mansergh wrote to *The Times* when the recent Prime Ministers' Meeting was about to begin, urging that the republican and racial issues in South Africa should be disentangled. He wrote of the earlier applications that

the approval required and given was understood to be approval of a form of membership which by reason of its novelty might be thought to require scrutiny. If more had been involved, approval would hardly have been given long in anticipation, as in the case of Ceylon. Yet the widespread use of the word 'readmission' implies that now, in respect of a South African republic, something altogether more far-reaching is at stake. This seems to me to be both at variance with precedent and undesirable in as much as it might serve to introduce an element of inequality between monarchical member-states, subject to no such scrutiny, and those among them who desired to adopt republican constitutions. This, I should have thought, was contrary to the whole spirit of the 1949 settlement on India.⁸

I am sure this is the right way to look at it; and the Prime Ministers would be well advised to cancel the now largely meaningless obligation for a state about to turn republican to come and ask permission as if it were doing something vaguely discreditable. If Commonwealth Members are to be censured, they should be censured directly.

The third constitutional matter is that of consultation. Here we find ourselves in a stifling web of sophistry and ambiguity. If we take consultation to mean simply discussion and information, then there is a system of consultation amongst the Members of the Commonwealth. Each is constantly in close touch with Britain through the Commonwealth Relations Office; each can approach British Government Departments without recourse to either the Commonwealth Relations Office or the Foreign Office; British High Commissioners have direct access to the Prime Ministers of most of the countries to which they are accredited; Prime Ministers continually discuss things with one another. What this amounts to is a system of intimate relations with Britain. It does not exist to anything like the same extent between other Members; South Africa, for example, did not participate in the system so far as Asian and other African Members of the Commonwealth were concerned. But the official theory of consultation goes further. The Commonwealth Relations Office still takes the view that 'there is a general understanding, affirmed at past Imperial Conferences and given formal expression in the External Affairs Agreement with Ceylon of the 11th November, 1947, that Membership of the Commonwealth carries with it an obligation to inform or consult, as may be appropriate, all the other Members on any projected action which might affect their interests, especially in relation to foreign affairs, and thus to give them the opportunity of expressing their own individual views'.⁹ If any obligation of this kind did remain—and the likelihood is doubtful, since the Agreement with Ceylon was exceptional, and no other post-war Member has bound itself to the same procedure—it was shot to ribbons by the British Government over Suez in 1956. I do not see how any theory of obligation in this regard will any longer fit the facts. The practice of the Commonwealth is of selective discussion, selective according to the issue in question, the country with which it is being discussed, and the effect on associates outside the Commonwealth. It is true to say that the Commonwealth countries, especially Britain, possess a method or system of consultation which is different from that which they practise with foreign countries; but it is quite untrue to say that they feel an obligation to tell one another everything that affects the interests of others, or that they act on such an obligation. Here is a real divergence between theory and practice, though the theory is vague and elusive.

That remark, while especially true of theory in regard to consultation, is true generally of the constitutional theory of the Commonwealth that I have been discussing. The position of Head of the Commonwealth is vague and elusive, once one tries to pin it down. The obligation to ask permission to remain when a Member becomes a republic is clear enough in itself, but has been used for purposes of quite a different sort. Consultation means all things to all men. The reason for all this vagueness is that there is, in fact, very little true constitutional theory about the Commonwealth, while such theory as there is has been made to meet particular circumstances, not by any self-conscious wish to give the Commonwealth a constitution which would accord with its essential nature. Theory made by practice, under the stress of circumstances, often wears poorly in its own right. The theory of consultation, as expounded by the Commonwealth Relations Office, is a good

example of this. It fits pretty well with the circumstances of the 1920s and '30s, when it was made; it has little or no relation to the 1950s and '60s, though it is still being expressed. Similarly, as I have shown, the business of special permission on becoming a republic was vital and necessary in 1949; it is an empty shell, a camouflage for other intentions, in 1961. In constitutional and quasi-constitutional terms, then, theory lags behind practice in the Commonwealth, and has to be hastily either disregarded or distorted to suit new needs.

Now we may examine that other area of theory which can be contrasted with practice, the area in which views are expressed about the principles of the Commonwealth, the ends it should serve and the true shape it should assume. This is the realm of theory in the sense of idealism. It has been much in evidence over the South African issue. I propose to consider theory here in terms of two related things, the views taken by various people of the essential nature of the Commonwealth, and the views taken of the principles which should inspire it.

The Commonwealth has been described in three ways by many people in recent discussions: as a 'family', as a 'club', and as an 'association of peoples, not of governments'. I think all of these are misleading in their implications, though each of them contains an element of truth—that is to say, each accords in some measure with the practice of the Commonwealth. The idea of the Commonwealth as a 'family' was used by the Bishop of Capetown in his notable letter to *The Times*, in which he pleaded for the retention of South Africa in the Commonwealth. He wrote: 'During the past months I have seized every available occasion to talk with representatives of the coloured and black peoples of South Africa. As a result, I am convinced that the vast majority wish to stay within the British Commonwealth of Nations. While within "the family", these non-whites feel they will not be wholly isolated nor completely forgotten. While within "the family" moral pressure can still be brought to bear on those who on their own might add injustice to injustice or inhumanity to inhumanity.'¹⁰ The same metaphorical description of the Commonwealth was used editorially by the *Sunday Telegraph* after the Prime Ministers had met and after Dr. Verwoerd had announced South Africa's withdrawal: 'Until last week', it said, 'the Commonwealth was a family with ties and conventions; its members were peoples that had grown up together. Now it is on the way to being a club, with rules and principles; some of its Members see themselves as governments trying to form a new kind of United Nations. Something precious has been lost, and it is not yet clear what can be gained.' Later the metaphor was varied in this fashion: 'Henceforth Commonwealth Members, when they meet, must be expected to conspire and virtually to vote; previously they only exchanged views. Britain may remain at the head of the table; but the patriarchal grandfather becomes the college head, who presides but can be out-voted.'¹¹ Here the editorialist has managed to combine the family and club, and add to them a college meeting. There is something in each of these. The Commonwealth is like a 'family' in that some of its members have ties of blood and religion and *mores* with Britain, and it is an association of formerly dependent States with the State on which they were dependent. The idea of a 'club', on the other hand, has some correspondence to actuality, because it emphasizes the equality of Members within

the Commonwealth and their freedom to come and go as they wish; it also emphasizes the informality of their relationship. Even the college meeting has something in it; it does recall the changing character of the Commonwealth conference table, and the persistence with which Britain retains the chair. But, in spite of the superficial attractiveness of these metaphors, they seem to me to suffer from the weakness of all analogies in political argument, from Plato onwards: the weakness of inviting the assumption that, because the analogue possesses some features in common with the actuality, other features are the same too. In fact, they may be quite different. Take the analogy between the Commonwealth and a family. A family is a focus of primary loyalty because of its special biological significance; it is only by a substantial stretch of the imagination that the Commonwealth can be regarded as a biological phenomenon. It has arisen through something which, for want of a better term, we often call 'growth'; but that growth is far more contrived, far more a matter of deliberate policy and assessment of interests on the part of the thing grown, than anything that happens in nature. Similarly, when we speak of a 'club', we need to recognize the very limited and distinct purposes for which clubs are set up—drinking, eating, playing sports, or just sitting about. There is some analogy between a man who spends part of his life in his club, and a nation which includes the Commonwealth amongst the various associations to which it belongs; the club metaphor is, in fact, the most suitable of all, especially since, as Lord Altrincham has pointed out, it has a certain 'snob appeal' in this context. 'If the United Nations is the R.A.C.', he has suggested, 'the Commonwealth is Brooks's. Even the republican members are susceptible to the charm of feeling exclusive.'¹² He may be right; I think that to some extent he is. But the more we talk about the Commonwealth as a 'club', the more we are inclined to neglect the fact that, in actuality, it is an association of states in the world of sovereign states—a world with its own perils, confusions, associations and assumptions, all different from those which a man encounters either in or out of his club. The point was illustrated by the recent Prime Ministers' Meeting. According to *The Economist*, 'the careful official line that seemed likely to prevail at the outset of the conference, with its emphasis on the niceties of good clubmanship and its apparent unconcern with what the Commonwealth has come to be especially for, was swept aside. . . . The bare bones of the matter stood out. When the rift that the British Ministers were trying piously to paper over revealed its full dimensions, it was a daunting sight.'¹³ It was daunting indeed, because it was a revelation of a clash of interests between sovereign states, the sort of thing with which international politics is concerned and club life is not.

You will see that I am not impressed by the indiscriminate use of these analogies (I shall not go into details about the college meeting, since this is rather esoteric and unlikely to be employed by persons who do not either write or read the *Sunday Telegraph*). They have their place as occasional illustrations, but they are misleading if pushed to the point of argument. The Commonwealth is not any of these things it is described as; it is an association of sovereign states, and any description of it must refer primarily to the *mores* of international politics, not to romantic

British institutions of one kind or another. No satisfactory theory can be built on these.

We come a little nearer to reality when we consider the statement that the Commonwealth is an association of peoples, not of governments. This idea has been much in vogue over the South Africa issue. It was first voiced by *The Times* in an editorial on 4th March, before the Prime Ministers met, in the following form: 'It can be argued . . . that the Commonwealth is an association of Governments. But it is no less true to say that it is an association of peoples'.¹⁴ When Mr. Macmillan discussed Dr. Verwoerd's decision in the House of Commons, he said: 'We are not a combination of Governments; we are a combination of peoples'.¹⁵ Six days later, in a general debate on South Africa, he modified this to 'not a league of governments, an association of peoples'.¹⁶ Later in the same debate, Mr. R. H. Turton went further and said, 'it was not, and never had been, an association of Governments; it was an association of peoples'.¹⁷ A few days earlier Mr. Menzies had put it differently again by saying, 'You don't admit a Government to the Commonwealth. You admit a nation. The other day we did not admit Archbishop Makarios. We admitted Cyprus'.¹⁸ The contexts all show that what was being emphasized was that the Commonwealth had social as well as—or more important than—political aspects. In the South African context this was taken to include both the attachment to Britain of English-speaking South Africans, and the opposition to *apartheid* of non-whites. What Mr. Menzies meant to imply, however, I cannot say, unless it was that the Turkish Cypriots had to be considered along with the Greek Cypriots—though, since Dr. Kutchuk came to London with the Archbishop, the Turks seem to have been as well catered for as the Greeks. How much is there in this general assertion? There is a good deal in it if it is stated in the form used by *The Times*, that the Commonwealth is *both* an association of governments and one of the peoples. But it has nothing to commend it in the form used by Mr. Turton, Mr. Macmillan and Mr. Menzies, in which the Commonwealth as an association of governments is denied and its whole position is stated to be that of an association of peoples. I am sure that Mr. Macmillan was betrayed by his eloquence, since he, of all men, must know that when the Commonwealth assembles for consultation or action it does so as a series of governments, a 'continuing conference of cabinets', as Mackenzie King so tellingly put it. It is the governments which decide policies in spheres such as foreign affairs, migration, citizenship, defence and the like; it is the governments which determine attitudes towards other Members; it is the governments which decide whether to enter or withdraw from the Commonwealth. To leave out the governments and try to fill their place with the peoples is to drain the Commonwealth of political meaning, to make nonsense of—indeed, to obscure completely—the actual practice of Commonwealth affairs. Here is a theory, or the germ of one, which would deny the very foundation of Commonwealth status, the Statute of Westminster, which speaks clearly in its preamble of decisions having been made by 'the delegates of the governments' of the Commonwealth.

However, as I said, it is still fair to say that the Commonwealth is, in some measure, an association of peoples *as well as* an association of governments. To say

this is to draw attention to the common heritage of language, education, culture, law and custom which many people in the Commonwealth share. It is to draw attention to the happy fact that people like myself can hold an Australian passport yet live and earn and vote in Britain. But it cannot go further than that, because the whole history of the development of the Commonwealth displays the primacy of governments in deciding Commonwealth issues. No peoples were consulted when it was decided to pass the Statute of Westminster or to terminate the need for Commonwealth Members to be united in a common allegiance to the Crown. It was governments which decided these issues, just as a government decided to take South Africa out of the Commonwealth. If we were to adopt the heresy propagated by Mr. Turton and Mr. Menzies, the next logical step would be for Commonwealth Members to decide that they could legislate for one another over the heads of one another's governments, on the grounds that those governments were unrepresentative of their peoples, and that it was the peoples, not the governments, which belonged to the Commonwealth. On the South African issue, something of this kind may well have been in the mind of Dr. Nkrumah, who probably thinks himself more representative of the Bantu in South Africa than Dr. Verwoerd is; I am sure Mr. Menzies and Mr. Turton do not want to encourage such a viewpoint.

You will notice that, so far, I have rejected all the idealist descriptions of the Commonwealth which are current, at least in their extreme and unmodified forms. I come now to a major issue which has been discussed in recent months, that of whether we can say there are any Commonwealth 'principles', other than the obvious constitutional rules which I discussed earlier. Many people say there are. Mr. Julius Nyerere, in his article which said that if South Africa remained in the Commonwealth Tanganyika would not join it, wrote of the 'basic concepts' of the Commonwealth, though he did not say what they were.¹⁸ *The Times*, although usually cautious about such statements, said before the Prime Ministers met that the Commonwealth 'could not afford to drift rudderless through the world, a hulk without principles';¹⁹ when South Africa announced its intention of leaving, *The Times* said the Commonwealth would be 'stronger by virtue of underwriting a moral principle'.²⁰ In the House of Commons debate on South Africa's departure, Mr. Gaitskell said that a change had occurred 'which rejected the old idea that this association and grouping of nations need have no special principles, no special affinities, except historical ties. It was a change which implied clearly the existence of common ideals—of racial equality, political freedom, of extending the right of self-government to the rest of the Commonwealth, non-aggression in international affairs, economic co-operation, and aid between nations. These ideals might be imperfectly realized in many instances, but they gave the Commonwealth its real justification to-day'.²¹ This kind of statement is not new. In 1948, for example, King George VI told his assembled Prime Ministers: 'Our Commonwealth has always stood for certain principles, fundamental to the good of humanity. It has never countenanced injustice, tyranny or oppression. The self-governing Members of our Commonwealth have always embraced peoples of different upbringing, social background, and religious belief; they have all had this in common, that they

were peace-loving democracies in which the ideals of political liberty and personal freedom were jealously and constantly preserved. Whatever the outward form our Commonwealth may assume in the future, the principles which inspire it must prevail in the world.²²

Against utterances such as these, which attempt to indicate the higher principles on which the Commonwealth is assumed to operate, one may place the declaration of Lord Salisbury, in the House of Lords debate on South Africa's withdrawal, that 'the only principle on which the Commonwealth can survive' is that 'there should be no interference either by the Commonwealth as a whole or by individual members in domestic affairs'.²³ He said that if he was told that the principle of absolute equality between races was, like nothing else, a principle which transcended all boundaries, and could never be regarded as purely domestic, his answer would be that he did not agree. There were other principles just as important, to which exactly the same arguments could be said to apply. What about freedom of speech? That, surely, to British minds, was one of the greatest of all moral principles and yet there were very wide variations and limitations in freedom of speech in the territories of more than one member of the Commonwealth.

I have juxtaposed these two notions about Commonwealth principles because I think it is salutary to see what theories are at work, and how they accord with practice. On the one hand are what one might call 'hopeful' theories of Commonwealth principle, those in which the speaker assumes that either Commonwealth countries individually, or the Commonwealth in some corporate sense, have adopted the set of ideals which he thinks appropriate for them. On the other is what we may call a 'practical' theory of Commonwealth principle, in which it is assumed that the association will continue to exist only if a particular principle of operation, that of non-interference in what a Member regards as its domestic affairs, is adhered to by all. Which of these theories is right, and which comes closest to practice?

By calling Lord Salisbury's theory 'practical', I have already indicated that I think his accords most with practice, although I do not draw the same conclusions in the South African instance as he does. I agree that, if any principle has been deducible from Commonwealth behaviour in the past, it is that the Members did not discuss officially matters which a Member said were domestic. The most notable example was Kashmir, which was ruled out of discussion, in spite of efforts by Pakistan to have it on the Prime Ministers' agenda, because India insisted that it was an Indian domestic affair—in the same way as she has insisted at the United Nations. Further, I agree that this 'principle of procedure', if we may call it such, has helped to hold the Commonwealth together in the past. The point is whether, in 1961, the British Government should have done as Lord Salisbury said and, in his words, 'refused to budge, whatever the pressure that was brought upon us and whatever the results might be'.²⁴ This is to argue that what occurred over South Africa was simply a routine case of domestic jurisdiction. But the point is that it was more than that. As I said earlier, it was a case where the raw realities of international politics intruded into Commonwealth relations. South Africa had become an impossible partner. She was detested—and with good reason—by

nearly every State which knew anything about her policies. Even Mr. Menzies, whose references to Dr. Verwoerd's personality after the conference suggest that he had not examined Dr. Verwoerd's views on the British Empire, the Monarchy, or participation in the Second World War—even Mr. Menzies said he had told Dr. Verwoerd that he disapproved of *apartheid*, though it is true that he said that his disapproval was 'a purely pragmatic approach, not sentimental, but practical', because 'it will not work in this day and generation'.²⁵ South Africa had become an impossible burden to British external policy, and an embarrassment to all other Members of the Commonwealth. Whether *apartheid* was domestic or not—and I am sure that, within the usually understood canons of international law, it was—it had become such an offence in the eyes of so many States as to transcend ordinary rules or principles of operation. The boil had to burst. It did. South Africa's departure will make the Commonwealth an easier place for the Members to be in; furthermore, I think it likely that the Members will now be, if anything, more anxious than they were before to apply the principle of non-interference in domestic affairs. Having got rid of South Africa, no offence of the same scale or dimension is likely to be brought before the Prime Ministers when they meet again.

My point is that the 'practical' theory of Commonwealth principle was right, but that the South African situation transcended normal practice and became an inescapable exception. What is there to be said about the 'hopeful' theories? Is it true, for example, that South Africa's decision to withdraw has committed the Commonwealth to principles of multi-racialism which it did not observe before?

I do not think it is. The Prime Ministers have not laid down any conditions about multi-racialism; they have said the Commonwealth is multi-racial (though this may mean only that it contains more than one race), and they were prepared to say that they disapproved of *apartheid*, but that is all. They have certainly not committed themselves to any statement which would make either racial equality or political democracy requirements of Membership. How could they? There is not racial equality in Ceylon—certainly you will not find anyone in India to say that there is, and Indians are the people most affected by Ceylon's discriminatory practice—and there is not political democracy in Pakistan. Every Commonwealth country limits immigration in ways which could be stigmatized by those kept out as 'racialist', although it is only Australia which stupidly attaches the label of colour to its policy. We do not need to go further than British dependencies to see how difficult the concept of racial equality is to apply. Does it exist in Fiji and Mauritius? The answer is No, and that there are very good reasons why it does not. But if the Commonwealth were committed to something called either multi-racialism or racial equality, the United Kingdom could readily be put in the dock for the policies it follows in those two colonies. The truth of the matter is that in showing their disapproval of *apartheid*, which is a blot upon humanity, the Commonwealth Prime Ministers were not committing themselves to any set of racial rules or making any obligations for themselves. Their viewpoint was expressed by Mr. Macmillan when he said in the Commons that 'what shocked the conference was that the policy of the present South African Government appeared to set up what we would regard

as an unhappy practice, inherited from the past perhaps, as the philosophy of action in the future. This philosophy seemed altogether remote and abhorrent to the ideals for which mankind is struggling in this century in the free world, perhaps—who knows?—sooner or later behind the iron curtain. It was not therefore because all of us were without sin that we felt so strongly, it was because this *apartheid* theory transposes what we regard as wrong into right'.²⁶ This was what I meant when I referred to a difference of scale or dimension between South African enormities and the sins of other Commonwealth countries. The one has been legislated for, at least by implication; the others, I am convinced, have not been touched and will not be; no principle has been established which will censure them. I think, therefore, that both the hopes of *The Observer* and the fears of *The Sunday Telegraph* about new principles having been imported will be disappointed, and that the Commonwealth will remain much as it has been—though much relieved by the departure of its most contentious Member.

I must now try to draw together the threads of what I have been saying. In this area of theory concerned with ends, aims, principles and obligations, I do not see any so-called 'theory' which will accord with practice; I can see that the Commonwealth Governments do from time to time agree on certain policies, and that they do at times think in much the same general way. If this amounts to principles, then the Commonwealth has them. But to say this is to make much the same point as I made about the analogies of family and club, and the notion of the Commonwealth as an association of peoples: each has something in it, but none is sound enough to form a basis for theory, and each carries with it the likelihood of misapprehension. Each embodies primarily the hopes and fears of those who voice it; each is a slogan rather than a theory. If we do treat any of these as a theory of the Commonwealth, we shall spend our time constantly explaining how theory and practice diverge, as I have done to-day. And that is not a very satisfactory situation, if one wishes to obtain a coherent and dependable—a truly theoretical—view of the Commonwealth.

I find myself ending with the belief that, in spite of my title in this lecture, the only worthwhile theory of the Commonwealth is one which satisfactorily explains and accords with practice. May I conclude by sketching an attempt at such a theory—not for the first time, I am afraid? I see the Commonwealth as a concert of convenience, an association of States which have joined for different reasons, all connected with their previous experience with Britain. In so far as the Members agree, their agreement is more fortuitous than deliberate, though it is based upon experiences and interests which overlap with one another's and provide a basis for mutual discussion and occasionally for common policy. The advantages they gain are primarily diplomatic, though for some of them there are also advantages in sentiment and in material gain. It is a concert because it functions in harmony rather than unison; it is based upon convenience because each Member suits itself as to what it puts in and what it takes out of the association. I do not think the South African case has invalidated that analysis. It would only have done so if the hopeful (and the fearful) theorists were correct, and the Commonwealth had committed itself to a set of principles and a programme. But this, I am persuaded, it has not

done and will not do. It will keep its theory, in the latter two senses I distinguished at the start, to the very minimum.

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DISCUSSION

MR. P. K. SHAHANI: Professor Bruce Miller said that the theory of the Commonwealth does not accord with Commonwealth practice. If he looks at any political theory, in any political period, will he just tell me whether there is any political theory which in fact accords with practice? I mean, is there in fact a democratic or communist country in the true sense of the word?

Professor Miller seems to constantly assume that there is some original sense in the Commonwealth, and does he not see there is an evolutionary structure? If he does, then this does point to something which might become even more dynamic; it might be that the Commonwealth Prime Ministers have not stated anything emphatically, but they have said something by implication which might become more apparent at the next meeting.

THE LECTURER: As far as the direction of Commonwealth evolution is concerned, your guess is as good as mine. It may be that the Commonwealth will move towards a greater assertion of principle and a closer unity. All I know is that it has not done so in the past and that over and over again, for some forty years, brisk-minded people have said that it would. They have been disappointed. I take it that one would need very substantial signs of change before one assumed that a change was going to occur; so many changes have been forecast in the past which come to nothing.

On the main point, I think I should have made it clear that what I have been saying about the Commonwealth theory in the sphere of ends, aims and obligations, is really just a minor illustration of a major tendency or situation. It is a fact about political life that people engaged in it constantly idealize the institutions with which they are concerned and dignify their idealizations with the name of theory; it is a fact too, I think, that this process is partly wish-fulfilment, a desire to have the

institution accord with one's dearest hopes. It is also partly a form of persuasion. Other people are again and again told that the institution in question is of one kind or other in the hope that they will treat it as if it were. This was very apparent, I think, on both sides in the recent arguments over South Africa's departure from the Commonwealth. Both sides, those who wanted her in and those who wanted her out, were very strong in their statements that the Commonwealth was essentially the kind of body which would have South Africa either in or out, depending upon the side to which they belonged; and one of my points here is simply to point out that theory as to the nature of the Commonwealth is highly fallible, highly selective, and based upon the particular persuasions of the people stating it. It is dangerous to accept these as a guide to action in the behaviour of the institutions with which you are concerned.

MR. M. S. RAJAN: Professor Miller said that India had objected to the raising of the Kashmir dispute at the Commonwealth Prime Ministers' Conferences on the ground that this was a matter within her domestic jurisdiction. I am not sure that he is correct, for the obvious reason that if we had treated it as a domestic matter we would not have taken it to the United Nations. I think the reason why we objected is precisely the same reason why members of the Commonwealth will not take their disputes to the International Court of Justice. All that we feel is that disputes between members of the Commonwealth are not appropriate questions for discussion at the Prime Ministers' Conferences.

THE LECTURER: I hesitate to cross swords with Mr. Rajan because he is so much more knowledgeable in this sphere than I am, but my impression was that what India took to the United Nations was what it held to be Pakistan aggression upon Kashmir as an integral part of Indian Territory, and what India objected to when it was proposed to be brought before the Commonwealth Prime Ministers was a Pakistan proposal that Indian behaviour within Kashmir, an integral part of Indian Territory, should be investigated by the Prime Ministers. In other words, two issues were presented, one which India regarded as a matter of domestic jurisdiction, that which Pakistan attempted to bring before the Prime Ministers, and the other which India regarded as a matter of external aggression upon Indian territory.

I do not see that they can be regarded as exactly the same. After all, we are talking here within the cloud-cuckoo land of formal international politics; it is the very basis of the whole Indian approach to Kashmir that Kashmir is an integral part of India and other nations have no right to question what goes on there, and that Pakistan has committed aggression against Indian territory. This is essentially an argument about domestic affairs. On the one hand you say it is your business what you do in your own territory, and on the other hand you say it is a matter of international jurisdiction when another country commits aggression upon it.

MR. RAJAN: I hate to enter into an argument with Professor Miller. My object was merely to point out, as a matter of fact, that that was not the reason given by Mr. Nehru in objecting to the Kashmir dispute being brought before the Commonwealth Prime Ministers' Conference—that the Conference is not an appropriate forum for the discussion of intra-Commonwealth disputes.

PROFESSOR T. H. SILCOCK: I should like to raise the question, about the South African issue, whether there is a constitutional element of disagreement over policy. Firstly, it has not been emphasized in public statements on the point, and there have been considerable efforts to separate the question of republican status from the racial one, but surely the decision to establish republican status and the request to remain in the Commonwealth on that basis is something which is closely linked with the policy of a comparatively small group of people within the whole population of South Africa? The fact that it came up in this form surely is one of the factors that influenced the various member states of the Commonwealth. I think that this is

a point to raise, because if constitutional matters only are relevant to decisions of change of this kind, it would be a much less dangerous situation I think than the situation that has arisen.

THE LECTURER: I am not quite clear as to your point. Are you saying that the Prime Ministers did in fact make a judgement upon the representative character of the South African constitution or are you saying that they should have done?

PROFESSOR SILCOCK: I do not know the details of what was said. I am raising the question as to whether in description and comment upon this situation it is desirable, as you seem to have done, to suggest that it is not in any sense a constitutional question if in fact the Prime Ministers were influenced by the fact that there was a large majority unrepresented in the decision.

THE LECTURER: It may well be that, as some of the Prime Ministers said, they were not prepared to regard a statement by the South African Government as representative of South Africa because it was an unrepresentative government. But to do this is, it seems to me, to break completely with the whole tradition of Commonwealth operation before and after the last war. If the South African Government is unrepresentative now it has been unrepresentative ever since there was a South African Government. It has always been a white man's government; even in terms of the white population it has been from time to time an unrepresentative government, in the sense of not being representative of the majority of the white population. (Of course, the British Government is not usually representative of the majority of the British population, but we do not regard this as important.) If in fact the Prime Ministers did import into their discussions on South Africa's decision to become a republic the statement, 'You are not fit to be a republic because your constitution is an unrepresentative one', then this really was a big step forward. It would lead logically to a discussion as to whether the Pakistan Government, which is the product of a *coup d'état*, is a representative government. It would lead naturally to an investigation of the status of the Government of Ceylon. It would be, in fact, the precursor to a whole series of investigations of the representativeness of Commonwealth governments.

It is always very difficult to know what is a representative government. The criteria one can apply are many and various. What the Commonwealth States have done up to now is to say that, if there is a government, it is the government. This is ordinary international practice, to assume that if there is a government in charge, keeping law and order, and one that is reasonably stable, then that is the government. International life could not proceed on any other basis. I am sure that the Commonwealth members at large consider Commonwealth relations cannot proceed on any other basis either, because if there were another basis it would be open to any Commonwealth government to proceed, as I suggested in my lecture, over the heads of existing Commonwealth governments and say that they knew better the minds and hearts of the majority of people in a particular country.

They will not do this, I am positive. Each of them has too many skeletons in its own cupboard. What they *have* done is to make a tremendous exception because of the enormities of the South African situation; this has transcended the normal range of international intercourse in the Commonwealth just as it has done in the United Nations. But it is unlikely that there will be any attempt to follow this up on a constitutional basis.

MR. W. E. PAYNE: I was interested in the question of a restricted and rational use of the term Commonwealth. It rather worried me, as a schoolmaster, in facing the problem of dealing with this matter in school. We are asked (by the Ministry of Education) to celebrate Commonwealth Day and talk about the affairs and problems of the Commonwealth, a term here used to include the dependencies and emergent territories, as well as the sovereign states. How would Professor Miller describe what used to be called the Empire?

THE LECTURER: I think this is a very good question. On the point at issue, I am out of step with a number of other commentators; I am out of step with the British Government, which is a grave position to be in! I think it is wrong to proceed, as the Ministry of Education does, and lump together colonies and independent states as all parts of the Commonwealth, because I am sure it gives to the young people in schools the impression that these are all much the same sort of international animal, only some a bit more grown up than others. This may be a harsh interpretation of much of the literature which goes out and the teaching which is done, but I think there is a good deal in it. It would be more to the point if the Government and schools distinguished very sharply between Britain's responsibilities towards her dependencies and the responsibilities of associations within an international partnership.

The difference between a colony and an independent state is so great, so momentous in terms of international behaviour, that it ought to be driven into children before they are given any sort of discussion of the Commonwealth at all. After all, what can a colony do, apart from rebellion, to make life difficult for Britain? Nothing, compared with what sovereign states can do in the international sphere. How much more difficult is the problem of persuasion and influence in regard to sovereign states, than that of telling colonies what to do.

I know it is often said that in the world at present independence is an illusion, that all countries are interdependent in some way with others. There is a great deal of truth in this, but it is still the case that to be a sovereign state is to be a much more significant and influential animal than a colony. The present condition of the United Nations, with the General Assembly now containing a substantial anti-colonial majority, is very different from what Britain and the other colonial powers used to experience in the United Nations five or ten years ago. It alters the whole complexion of British external policy. It is what lies behind such a thing as the British adherence to a motion condemning apartheid in South Africa. My point is that what really matters is Britain's behaviour in the international sphere, and the behaviour of other countries, especially Commonwealth members, towards her. This is the enduring thing, because independence is a permanent condition for Britain's former dependencies, and dependency is a temporary passing condition. If children are to understand this, they must know that independent states can do as they like and that Britain retains her connection with them only in the most tenuous and unusual way. That tenuous connection is in itself a sufficient achievement to be presented to children as something remarkable.

So I should like to see, first, a clear statement of the difference in kind between colony and independent state; and secondly, I should like it to be driven home to children that, so long as countries remain British dependencies, British responsibility for them is far greater than its responsibility for an independent state. I do not agree with the point of view that assumes that when a country becomes independent it just passes over from one British department to another, and we go on handing out the same amount of money and giving it the same kind of technical advice; because we simply do not. The country in its independent state refuses to be in that condition of tutelage which is, up to a point, welcomed in a colony. What I should like children to realize are on the one hand their direct responsibilities as a sovereign community towards the remaining colonies, which ought to demand real sacrifice from them and their country, and on the other that responsibilities towards fellow members of the Commonwealth are quite different. They are a relationship of equals; that being so, financial and other forms of responsibility are very much less. But I can only say to you, as Bernard Shaw said to the man who booed his play from the gallery, 'Who are you and I against so many?'

MR. R. J. FINIGAN: I think Professor Miller is fortunate in the way he is able to look at the Commonwealth, because he is not living in London, and if you don't

live in London the Commonwealth is very much easier to understand. Living in London you get the feeling that you live with something which is a cross between an animated teleprinter, and a sort of strange supernatural, link with all the capitals of the world. If you live in a world which has any relation with outside you are not quite sure whether London is a situation or a geographical centre.

I happened to be in Blackburn about five weeks ago and went to the Commonwealth Exhibition there in the Town Hall, and watched some school children who were going round the exhibits. The whole thing was very much clearer to them than it is from—a Stationery Office pamphlet, for example. From the historical exhibits there, and from the films and things that were shown, it was pretty clear to these children that this Commonwealth *situation* is one which changes rapidly; and that anything in the nature of a theory of Commonwealth such as we have been hearing about this afternoon, seeks to explain that the thing is really 'rather logical'. You put it down in your text book and, thereafter, if anything happens you can refer back to your theory. This is the world of grown-ups! It is really rather terrifying to children, and it also would seem to hide one of the most important facts: that the Commonwealth, as we know it to-day, has only existed since those children's grandfathers were about fourteen or fifteen. It's on the move. It is rather like the man who said 'he could not count his sheep because they kept moving around in the field'. One does feel that often there is a desire to find a theory of Commonwealth in order to put it down and say, 'Well, there it is! It is safe and we can refer to it without too much worry'. Whereas, in fact, if one does this with the Commonwealth one is ignoring its real dynamics.

If you take another look fourteen or fifteen months later, some new State has joined and the Commonwealth has changed in order to accommodate extra members; and also, members of different size and character. Therefore in a way I get the feeling this afternoon that Professor Miller has really been rather sad at the idea that anyone uses the word 'theory' in conjunction with the Commonwealth; and I suspect it is because it is liable to deceive.

THE LECTURER: I think the Commonwealth is really much the same sort of body in action—the same sort of diplomatic being—as it was in the 1920s and 1930s. It seems to me that the behaviour which Ireland, Canada and South Africa displayed then was just as disappointing to people who want the Commonwealth to be a single unit and follow the British lead as has been the behaviour of India, Ghana—and indeed South Africa—in the last ten years or so. In other words, what was established by circumstances in the 1920s and '30s was a set of sovereign states with Britain in a rather ambiguous relation to them, but with their sovereign status and their right not to be legislated for by one another established as the basis on which the association proceeded. They were not very grown up as sovereign states then; they did not have very much in the way of policy towards the world at large; but still you can, it seems to me, trace back into the 1920s and '30s very much the lineaments of the present Commonwealth.

If you assume, not that the Commonwealth has grown up, but that *the states within it* have grown up to more adult status in the world—in terms of the alliances they enter, the representation they have, the policies they pursue, their scope of operation—then it seems to me you can see a clear line of succession. In other words the Commonwealth as the association has not changed particularly; the members have become more active and self-confident, and of course there are more of them.

MR. M. SAEED FAIZ: Professor Miller said that one of the Queen's speeches in Pakistan had caused some slight offence in India, and he said that it was a question of whether Her Majesty was right in making those statements, or the Ministers were right in advising her to do so. I think it is not so important whether the Queen was advised, as whether she had the right, or the freedom of speech, to make certain statements as Head of the Commonwealth or as Head of Great Britain—whether one

can make a distinction between the Head of the Commonwealth and the Head of State of Great Britain?

THE LECTURER: Well, we do make a distinction, because as Head of the Commonwealth the Queen has some special relation to the republics in the Commonwealth which is not the same as the relation in which she stands when she is seen as Head of State of this country. I know it sounds difficult, but quite deliberately the Commonwealth Prime Ministers have worked out these separate statuses to accommodate the facts of Commonwealth life.

What I have been doing is simply to ask, if the Queen was in India and Pakistan because she was Head of the Commonwealth, what did this mean in terms of responsibility for her statements and actions? If the Queen goes to Portugal as the Head of State of the United Kingdom and makes speeches, we know who has written the speeches. It is perfectly simple, she has just gone there as Head of the State of the United Kingdom, and the Australians, the Canadians or the Nigerians are not responsible for what she says about the Portuguese; but if the Queen has gone to India and Pakistan as Head of the Commonwealth and not just as the Queen of the United Kingdom, then it is a different problem to decide whether anybody was responsible for what she said, and if so who.

SIR HAROLD SHOOBERT (Hon. Secretary, Pakistan Society): Rather a nice point arises out of that. The Queen was invited first, I think, by Pakistan, then by India, to visit them, but was she invited as Head of the Commonwealth or as Head of another State, to whit Britain? I am not sure.

THE LECTURER: I am pretty sure the announcements said that it was in her capacity of Head of the Commonwealth that she visited these states.

THE CHAIRMAN: I am very grateful to Professor Miller for elucidating the situation at the moment, because my life has been ruined—really seriously academically ruined—by this subject. I started with *Federations and Unions in the British Empire*, by a gentleman called Egerton, when I was a schoolboy; an examination on it was the only examination I seriously failed; and then went on to Mr. Duncan Hall's *The British Commonwealth of Nations*. I must say that I do think that Professor Miller has clarified the immediate situation. The thing I should really like is a second lecture in which he would give the genetical description, and if he were to go through the process by which the situation he has analysed has been brought about, then perhaps he might have sympathy with the people who produced theories which are open to all the criticisms you can give against analogies that people are driven to! I am happy to see that he shares with the great English historian Maitland a desire to criticize and destroy false analogies—family and club, for example—as applied to operations to which they have no relevance whatsoever.

I am sure now you would like me to express on your behalf our thanks to Professor Miller for his fascinating illumination and analysis.

The vote of thanks to the Lecturer was carried with acclamation.

SIR HILARY BLOOD (Chairman, Commonwealth Section Committee): I ask you to give a very hearty vote of thanks to our Chairman. We try at these meetings to establish a community of interest, or a community of friendship, between the Chairman and the speaker, and you will, I think, agree that to-day we have been particularly successful in both respects.

I feel certain that the Professor must have listened with enormous interest to his pupil, and that the pupil—with or without due deference—has been glad to have the opportunity of having his mentor in his audience. Thank you, Professor Smellie; you have conducted this meeting with efficiency and, with what is a much greater gift on the part of a Chairman, with humour.

The vote of thanks to the Chairman was carried with acclamation, and the meeting then ended.

GENERAL NOTES

ANGLO-GERMAN DESIGN AWARD

Lorenz Hutschenreuther, the Bavarian porcelain manufacturers, have recently instituted an interesting annual competition for young artists in the United Kingdom. They offer a prize of £250 and a month's visit (with all expenses paid) to their works at Selb, for what shall be adjudged the best design submitted for use on porcelain table ware. The competition is open to any citizen, of either sex, of the United Kingdom, who is under the age of 30 on 1st October, 1961. This is also the closing date for the receipt of entries, which may be as many as desired, provided they are in colour and created with a dinner plate of conventional shape and size in mind.

The winning design will be chosen by a panel of judges including, on this first occasion, Sir Kenneth Clark, the Marquess of Queensberry and Mr. E. A. Lane, Keeper of Ceramics at the Victoria and Albert Museum. The copyright of this design will be the property of the sponsors, who announce their intention to negotiate, on normal commercial terms, with the designers of any other entries they may wish to acquire.

Full details of the competition should be obtained from The Organizer, Anglo-German Design Award, Continental China Ltd., 32 Brooke Street, London, E.C.1. In the showroom at this address a wide selection from the current products of Lorenz Hutschenreuther may be studied.

FACTORY EQUIPMENT EXHIBITION, 1961

A number of complimentary tickets for the 1961 Factory Equipment Exhibition, to be held at Earl's Court, London, from 13th to 18th November, will be available to Fellows of the Society by courtesy of the Exhibition sponsors (the London Chamber of Commerce, *The Financial Times* and *Industrial Equipment News*). Those Fellows who are interested are invited to apply to the Secretary.

'FIVE CENTURIES OF PRINTING HISTORY'

The St. Bride Printing Library, which provides a unique source of reference material for the study of the development and practice of printing, is holding an exhibition entitled 'Five Centuries of Printing History' at 18 Adam Street, W.C.2 (the Society's exhibition rooms) from 18th to 23rd September. The object of the exhibition, which may be visited free of charge, is to attract attention and financial support, both from the trade and general public, in developing the work of the Library. All the material shown will be from the Library's collection, which is particularly rich in type-founder's specimens.

FIRST INTERNATIONAL CONGRESS OF FOOD SCIENCE AND TECHNOLOGY

It is announced that the first International Congress of Food Science and Technology will be held at the Imperial College of Science and Technology in London from 18th to 21st September, 1962, under the Presidency of Lord Rank of Sutton Scotney. The programme, which has been planned on a comprehensive basis with a view to attracting the widest attendance from food scientists and technologists, will include four main sections, devoted respectively to chemical and physical aspects of foods; biological and microbiological aspects; quality, analysis and composition, and manufacture and distribution. The registration fee for attendance is £7 10s. or \$22. Copies of the tentative programme and application forms are available from Mr. Francis J. Griffin at 14 Belgrave Square, London, W.1.

OBITUARY

We record with regret the deaths of the following Fellows of the Society.

MR. RECO CAPEY

Mr. Reco Capey, R.D.I., A.R.C.A., who died on 11th May, aged 65, had been a Fellow of the Society since 1934, and was elected to the distinction of R.D.I. in 1938. Since 1952 he had been closely concerned with the judging of entries in the Society's annual Industrial Art Bursaries Competition.

Mr. A. B. Read, a former Master of the Faculty of R.D.I., has contributed the following appreciation:

I had the happy experience of working with Reco Capey as a student immediately following the end of the first great war, and we remained good friends for over forty years. His death is not only a tragic loss to Muriel his wife, who helped him and inspired him, but his passing has deprived the Faculty of one of its earliest and well-loved members.

After service abroad in the 1914-1918 war Reco returned to his home town of Burslem to work as a junior designer in a large pottery firm and attended Burslem School of Art as a day-release student, later gaining admission to the Royal College of Art. In London he worked with tremendous vigour and enthusiasm, exploring many fields of design. He experimented with new ceramic techniques, made a deep study of Chinese lacquer and also developed a passion for the exciting possibilities of designing and printing textiles.

In 1924 I shared with Reco a year of work for the newly formed Rural Industries Bureau, and during this time we travelled about the South of England visiting rural craftsmen working in wood and iron. Sharing with him the small workshop put at our disposal at Froxfield I found him a most inspiring companion, and we cemented a friendship which remained unbroken. He discovered the charm and beauty of Sussex, and later bought a house at Alfriston where he lived for the last ten years of his life.

He was for several years Chief Instructor in Design at the Royal College of Art, and in 1928 he joined the firm of Yardley as Art Director, an appointment which he held until his retirement a year or two ago. From 1937-40 he was Chief Examiner in Industrial Design for the Board of Education.

The rôle of the designer in industry is now universally recognized, but in the 1920s opportunities for the designer were few, and when he was employed his scope was usually very restricted. Reco Capey had experienced the cramping conditions for the designer in the Potteries and it is a measure of his achievement and the quality of his work that he gained recognition in the sphere of industrial design and was one of the first twenty designers to receive the distinction of Royal Designer for Industry.

He was a generous and loveable character, kind and helpful to all, particularly to students and young designers. He will be missed by a large circle of friends who grew up with him and by all the members of the Faculty.

SIR WILLIAM CURRIE

Sir William Currie, G.B.E., Chairman of the P. & O. Steam Navigation Company and of the British India Steam Navigation Company from 1938-60, died on 3rd July, aged 77. By virtue of his position, business acumen and capacity for friendship he had for many years exercised great influence on the fortunes and policy of the shipping industry.

Currie was born in India, and educated in this country, at Fettes and Cambridge. In 1906 he returned to Calcutta to join Mackinnon Mackenzie & Co., managing agents of the British India Steam Navigation Co. He rose to be senior partner of the

firm in 1922, and also became prominent in Indian public life. He served as Sheriff of Calcutta, as a member of the Bengal Legislative Council and as President of the Associated Chamber of Commerce of India, Burma and Ceylon. In 1925 he was appointed a Member of the Council of State for India, and was knighted.

In the following year he returned to this country and took up a partnership in the firm of Gray, Dawes & Co. Thereafter his responsibilities in British shipping steadily increased. He was chosen President of the Chamber of Shipping in 1929, and in 1932 began his long service on the Board of the P. & O. During the war, as Chairman of this and the British India Steam Navigation companies, he showed great determination and ability in contending with the losses sustained by their fleets, and also did vital work at the Ministry of War Transport, where he was Director of the Liner Division from 1942-5. In addition, he worked for the Red Cross and the Order of St. John.

In 1945-6 Currie was President of the Institute of Marine Engineers, and from 1946-8 Chairman of the British Liner Committee. He was elected Prime Warden of the Worshipful Company of Shipwrights in 1949. Amongst the maritime institutions and causes which he served were the King George's Fund for Sailors, the training ship *Worcester* and the National Maritime Museum.

Currie was made G.B.E. in 1947. In May, 1950, he read a paper on 'British Shipping' to this Society, of which he had been a Fellow since 1936.

DR. LEE DE FOREST

Dr. Lee de Forest, who died in Hollywood, California, on 30th June, made a pioneer contribution to the development of radio transmission, and of television, by his invention of the audion amplifying valve. This he achieved in 1906. Four years later he became the first to broadcast the voice of the Italian tenor, Caruso, and in 1916, at a time when his valve was proving of increasing value in the improvement of wireless communications, he arranged the first radio news broadcast. Later in the same year he set up his own radio station. After the First World War, de Forest turned his attention increasingly to the application of his three-electrode valve in the development of talking motion pictures. The remarkable scientific advance made possible by his 'Phonofilm' was first described and demonstrated in this country by C. A. Elwell at a meeting of the Royal Society of Arts in November, 1924 (*Journal*, Vol. LXXIII, p. 89).

De Forest's discoveries and inventions were recognized by numerous honours and distinctions, amongst them the Cross of the French Legion of Honour, the Edison Medal, the Gold Medal of the World's Fair at St. Louis in 1909, the Elliott Cresson Medal and the Gold Medal of the Institute of Radio Engineers, of which he was the founder and a Past President. He was elected a Benjamin Franklin Fellow of this Society in 1960.

SIR KARIAMANIKKAM KRISHNAN

Sir Kariamanikkam Krishnan, F.R.S., D.Sc., Director of the National Physical Laboratory of India since 1947, died on 14th June, aged 62. He was Chairman of the Board of Research in Nuclear Science and a Member of the Scientific Advisory Committee to the Indian Cabinet and of the Atomic Energy Commission.

After completing his education at the University College of Science, Calcutta, and a period spent as Demonstrator in Chemistry at the Christian College, Madras, Krishnan was for five years Research Associate at the Indian Association for the Cultivation of Science, and then for a similar period Reader in Physics at the University of Dacca. From 1933-42 he was Mahendralal Sircar Research Professor of Theoretical and Experimental Physics at the Indian Association, and from 1942-7 Professor and Head of the Department of Physics at the University of Allahabad. He was elected a Fellow of the Royal Society in 1940, and in the course of a distinguished career received many other marks of esteem from learned societies and

universities in India and abroad. He also played a leading part in the affairs of international scientific organizations. He was Vice-President of the International Union of Pure and Applied Physics from 1951-7, and a Member of the Executive Committee of the International Union of Crystallography from 1951-4. Since 1955 he had been Vice-President of the International Council of Scientific Unions and Chairman of the Unesco Scientific Advisory Committee. Of his published papers, those on optics—he collaborated with Sir C. V. Raman in the discovery of the Raman effect—will be particularly well remembered.

Krishnan was knighted in 1946. He became a Fellow of the Society in 1951.

BARON GEORGES MARCHAND

Baron Georges Ernest Edmond Marchand, who died in Edinburgh on 24th June, aged 70, was a well-known and respected figure in that city for over fifty years, and had been Belgian Consul-General there since 1955. A Frenchman by birth, he was appointed to this post in recognition of his outstanding services to its previous holder, and by virtue of his wide experience of business and social life in the Scottish capital. Marchand, a gifted linguist, was a former Director of the Edinburgh Chamber of Commerce, and at the time of his death, convenor of the Chamber's Export Group. He gave unfailingly generous support to local charities and good causes.

He became a Fellow of the Society in 1953.

MR. G. A. MAUNSELL

Mr. Guy Anson Maunsell, who died on 20th June, aged 76, had a distinguished record as a civil engineer, and was responsible for some remarkable inventions. The most notable were the concrete sea forts and floating docks which were built to his design during the last war for the Admiralty. The floating structures were not only of great practical value in themselves, but provided the experience necessary to develop the later 'Mulberry' harbours.

Maunsell received his early training in Switzerland on hydro-electric construction and in Scotland at the Rosyth naval base, where he was put in charge of the large labour force whilst still a comparatively young man. During the First World War he served in France with the Royal Engineers until 1917, when he was recalled to undertake experiments in devising concrete 'ships' and towers. Subsequently he worked under Sir Alexander Gibb at the Ministry of Transport and with the firm of Dorman Long & Co., before setting up in independent practice in 1936. Amongst the many important engineering works for which he was largely or wholly responsible were the Falls of Clyde hydro-electric scheme, the widening of Putney bridge, the construction of the Sorstrom bridge in Denmark—the longest in Europe—and the rebuilding of the Menai suspension bridge (in which he was again associated with Sir Alexander Gibb). His last large-scale undertaking was the 1,000-foot span arch bridge now being built in Sydney.

Maunsell was elected a Fellow of the Society in 1937, and contributed two very instructive papers to its Proceedings: 'Engineering Construction as Applied to Docks and Floating Structures during the War' in May, 1946 (*Journal*, Vol. XCIV, p. 355), and 'The Applications of Reinforced Concrete', in December, 1949 (*Journal*, Vol. XCVIII, p. 213).

NOTES ON BOOKS

BAROQUE IN SPAIN AND PORTUGAL. By James Lees-Milne. London, Batsford, 1960.
35s net

In its earlier forms Baroque is a Jesuit style, and Loyola, the founder of the Jesuits, was a Spaniard. The most considerable Baroque artist, Bernini, was a native of Naples, and Naples was Spanish at the time. Spain has therefore a family claim upon

the Baroque spirit in the arts, and one is pleased to find James Lees-Milne, in *Baroque in Spain and Portugal*, examining Iberian Baroque with the same care and perception which marked his earlier study of the Baroque in Italy.

He sees the main two tendencies in Spanish Baroque, the sombre and austere Herreran, and the highly decorated Plateresque, as outward expressions of two aspects of the Spanish character. The Plateresque gave up the struggle for survival with the Neo-Classical victory at the close of the eighteenth century, and Herreran tendencies are observable in much more recent examples of Spanish architecture. Nevertheless Lees-Milne, paradoxically, looks on the Herreran as an essentially unpopular and alien style, associated with Hapsburg oppression.

If we agree with Lees-Milne that the Herreran style is essentially alien we must regard the Plateresque as being much more than a side shoot from a Baroque plant rooted in Italy. The design of Spanish churches had to be submitted to Rome for the approval of the Jesuit General, so, as the author says, 'It is not surprising that a Roman slant was given to them'; but the intensely devotional Spanish spirit, which never fell under the Renaissance humanists' paganism, survived the amendments from Rome. What an uncomfortable and lively Baroque was the result!

Spanish Baroque is not only almost completely ecclesiastical; in its Plateresque form it is the Baroque of the reliquary. The reliquary effect is heightened by the contrast between the natural austerity of the Spanish landscape and the sumptuousness of the architectural decoration. It is further heightened by the fact that, whilst in other countries church treasures have often been removed to public museums, in Spain this is not the case. In Spain the reliquary still contains the relic, and the relic is still worshipped.

An interesting aspect of James Lees-Milne's book is his demonstration of the close connection between Spanish Baroque and Spanish Gothic. He sees the one as an effort of the proud, intense Spanish character to dumbfound the Moorish infidels, and the other as an effort to counterblast the Protestant heretics. The relaxation of the Church after the Counter-Reformation produced an easy, tactfully grandeur in Italian Baroque, but in Spain the Church never relaxed at all, and Spanish Baroque was the result.

By contrast, Lees-Milne sees Portuguese Baroque as an expression of a profound nationalism.

The style here is just as much secular as religious: as much associated with town palaces and country villas as with churches. In the eighteenth century it has perhaps more taste but less vitality than its Spanish counterpart. This may be because the Portuguese at this time were a confident and successful people, without that chip on the shoulder which so often leads to the most stimulating forms of artistic creation.

James Lees-Milne has the happy ability of the good teacher who can make his pupils think they have discovered something for themselves. Upon re-reading him they usually find they have been carefully led to their conclusions. The success of gentle scholarly guidance, though, depends upon the reader having a prior interest in the subject, and being in need of direction rather than stimulus. Lees-Milne's approach, then, makes *Baroque in Spain and Portugal* no less valuable, but will no doubt make it less popular than its companion, *Baroque in Italy*.

RICHARD HILEY

THE PAPERS OF BENJAMIN FRANKLIN. Edited by Leonard W. Labaree. Volume I, January 6, 1706 through December 31, 1734; Volume II, January 1, 1735 through December 31, 1744. New Haven, Yale University Press, 1959-60. (London, Oxford University Press, 60s, 80s)

The Papers of Benjamin Franklin is not simply the title of a definitive historical publication which will one day stretch to forty volumes, it is also the name of a remarkable institution which for the last seven years has been hard at work making that

publication possible. Although the American Philosophical Society and Yale University sponsored the project, it soon assumed a character of its own, and by placing on its letter head a contemporary visiting-card of 'Mr. Franklin', invoked his palpable presence to assist in its immense inquiries.

Franklin had himself appreciated that his papers would hold an interest for posterity and had made some efforts in his lifetime to collect together his scattered letter-books. He bequeathed the collections to his grandson, William Temple Franklin, who published a selection in his *Memoirs of the Life and Writings of Benjamin Franklin* in 1818. The original papers of this edition remained unused by scholars until John Bigelow's *Complete Works of Benjamin Franklin* appeared in 1887 and 1888. Bigelow had added to his edition material which had been unknown to William Temple Franklin, but he omitted to make full use of the important 'Fox-Franklin' papers. These consisted mainly of papers not used at all by Temple Franklin and bequeathed by him to George Fox, from whom they passed to the American Philosophical Society. In 1905, as part of its celebrations for the Franklin Bicentenary, the Society sponsored the publication of A. H. Smyth's *Writings of Benjamin Franklin* and, in 1908, of J. Minnis Hay's *Calendar of the Papers by Benjamin Franklin in the Library of the American Philosophical Society*. In spite of their general excellence, these works were by no means complete. Smyth had material for more than the ten volumes to which he had been limited by his publishers, and in the 1930s the American Philosophical Society, helped among others by Dr. A. S. W. Rosenbach, began a spectacular programme of acquiring Frankliniana which is still continuing.

The Editors of the edition under review begin by a frank admission that their work 'is intended to be comprehensive' but that 'it cannot . . . be complete, for there are Franklin manuscripts we have not been able to find and Franklin writings we have not identified'. This is the modest prologue to a work which is expected to take fifteen years to publish. It is an expression of that high quality of modern historical scholarship which is familiar to British readers through publications of the American University Presses. Extreme care has been taken to investigate all possible sources of Franklin material. Among the more fugitive items were seven letters by Franklin, presented as part of a collection of historical autographs to the Prince of Wales (King Edward VII) in 1860, and now in the Royal Archives at Windsor. 'We began as scholars', wrote the Editors, 'but have become sleuths and venturesome serendipitists as well'.

Volumes I and II of the *Papers* cover the first 38 years of Franklin's life—years in which he lived out his maxims for that success, in business and provincial society, which enabled him in later life to make a spectacular entry into the world of international learning and to play a part in the affairs of nations. His work as a printer and journalist brought him so close to the English language that it was for him a process of continuous education. He read Augustan and Restoration writers in order to obtain copy for his contributions to newspapers, for his pamphlets and for his own *Poor Richard's Almanack*. 'Silence Dogood' derives from the *Spectator*, he used Petty for his *Enquiry into the Nature and Necessity of a Paper Currency* and, as Professor Robert Moore stressed to this Society last year, his debt to Defoe was incalculable. The combination of broad humour, anti-popish sentiments, and miscellaneous historical, geographical and astrological information, gives to Franklin's earlier writings an almost seventeenth-century character. His pen is fluent both in his oft-quoted homilies and in such epigrammatic precepts as 'Scandal, like other Virtues, is in part its own Reward, as it gives us the Satisfaction of Making ourselves appear better than others, or others no better than ourselves'.

When composing an 'Humble Address' to Thomas Penn from the Library Company of Philadelphia, he showed an acquaintance with the traditional forms for petitioning the great which aroused objections from 'those who had accustomed themselves to what is called the plain Language'. The Library Company, formed by

Franklin in 1731, was his 'first Project of a public nature', and was aimed at spreading the 'Refinements of Life' in the Colonies which in the first period of settlement 'cannot be much attended to'. Twelve years later he was to make the same point in his proposal 'That one Society be formed of Virtuosi or ingenious Men residing in the several Colonies to be called *The American Philosophical Society*'. It was the receipt of a copy of this proposal by William Shipley in 1755 which led to Franklin's association with the Society of Arts; a story which will be told in future volumes of *The Papers of Benjamin Franklin*.

D. G. C. A.

PROFESSIONAL PRACTICE FOR DESIGNERS. By Dorothy Goslett. London, Batsford, 1961.
30s net

This excellent and fully informative book is an essential requirement for any designer setting up in practice and will be of the greatest possible help to those designers already practising in all fields of design. The purchase of this book must take priority above all other considerations; even over those first three requirements given by Miss Goslett in Chapter 1 for the trained designer contemplating the setting up of an office—having a client, some money in the bank and a place to work. A study of the book will certainly help to keep a client (if not to find one), to use money well and to ensure better working conditions. It is indeed difficult to understand how designers have been able to practise effectively and efficiently without the benefit of Dorothy Goslett's experience and guidance, and we are fortunate that she has had the inclination and the energy to write so clearly and so comprehensively about the business of design.

A talent for design has for too long been regarded as a kind of heaven-sent gift and the practice of design as a pleasurable hobby. Pleasurable and interesting it is, but ability results only after years of study and work, and skill in design should bring rewards commensurate with those of other professions. The trial and error tactics of designers in the past have inevitably given rise to misunderstandings by both designers and their clients, and recognized procedures, regulated fees and good service will not only help to remove difficulties but also encourage the use of the designer and the special contribution he has been trained to provide. The author recognizes the great work done by the Society of Industrial Artists in this direction. This new book marshals all the facts and is written with such authority, directness and clarity that it should be read and understood not only by designers but by those who commission their work.

The position of the designer in industry is a comparatively new one, and it is natural that professional practice has evolved from experiences of designers working in many different ways in varying fields of design. Established systems of working and ways of commissioning design vary considerably in different industries, and an appreciation of these conditions is essential in the training of industrial designers. Training has rightly concentrated on the aesthetic and the technical contents of design, but with the new and growing interest in the training of industrial designers in schools and colleges of art, the availability of Miss Goslett's book will be of inestimable benefit to staff and students alike. The lack of such a guide to the business practice of design has long been known, and design students have suffered as a result. A recurring criticism of the design student trained in schools and colleges of art has been his unawareness of the need of some knowledge of normal commercial practice in making his first approaches to industry and commerce. No one could have provided this knowledge in such a complete and entertaining way as Dorothy Goslett, who has been responsible for the business management of a successful and internationally recognized design organization.

A. B. READ

THE BUSINESS OF MANAGEMENT. By Roger Falk. Harmondsworth, Penguin Books, 1961.
3s 6d net

This apparently simple title begs at least two questions—is management a 'business' within the normally accepted meaning of that word, or can the art of management—if it is an art and not a business—be learnt like any other skill? Mr. Falk appears almost to confuse himself as well as the reader in seeking to cover this subject in such profuse detail. This is not to say that his book is not worth reading or that the reading of it will not benefit the seeker after knowledge on the subject of 'What is management?', about which business men are becoming increasingly inquisitive. He says that it was generally accepted twenty years ago that character was the quality most needed in young men who were destined to become the managers and that a mixture 'two parts character and one part experience' gave British business the lead in the eighteenth and nineteenth centuries: and that there is not much wrong with that formula to-day.

However, business and business undertakings have become so large and complex that the executive control of every function is no longer within the capabilities of any one man, and Mr. Falk does a service by discussing in great detail how the jig-saw of which the separate pieces are Sales, Production, Maintenance, Transport, Research, Design and Administration, spread perhaps over a number of separate factories, can be so fitted together as to form a whole pattern which is capable of being understood and controlled by a Board of Directors, whose success in so doing is shown by the extent to which they can make profits. He rightly lays stress on the paramount importance of profit to stimulate growth and make possible the improved standard of living which goes with it and must be the objective of every form of society.

In discussing his method of judging the credit risk, a very wise and successful banker said many years ago 'Give me character, not collateral', and after reading Mr. Falk's book one reaches the same conclusion. But he goes further; he suggests that 'character' within its meaning here can to some extent be learnt by the rising generation. The need to use every endeavour to maximize any latent managerial ability there is has been well put by Mr. Paul G. Hoffman, who has said: 'Millions in public capital have gone into countries where there were not people trained in the technical, managerial and vocational skill required to carry out development projects. . . . Thus while it is imperative that these countries survey their natural resources and draw up programmes spelling out priorities for the strategic investment of capital in their development, so must they draw up some kind of a high level manpower budget for the next ten or even twenty years.' Mr. Hoffman may have been referring to the so-called under-developed countries, but his remarks also apply with great force to Great Britain.

NUTCOMBE HUME

FLICKERING FLAMES. By Leroy Thwing. London, Bell, 1960. 40s net

Artificial lighting is so much an accepted part of our environment that its history goes largely unheeded, and it is hoped that the publication of this book—following as it does within two years *The Social History of Lighting*, by William O'Dea—indicates a growing interest in the fascinating story of its development.

The author is an American, whose association with students, museums and collectors for over 25 years has enabled him to produce an authoritative record of flame domestic lighting devices used from the remote antiquity of some 20 millennia, B.C., until the present day, which the introduction divides into four periods—the period of primitive methods; the classical period; the medieval period and the period of invention.

A vast amount of information culled from a wide variety of sources and countries

is condensed into 138 pages of text, and to do this no words are wasted. Because of the widely differing rate of progress throughout the world—to-day, vast numbers of people in the undeveloped or isolated countries still use oil lamps—it is not possible to base the book on a strictly chronological order; therefore, each type of lamp is described under a boldly printed heading and appropriately grouped into chapters of which typical titles are 'Grease lamps', 'Betty lamps', 'Lamps with vertical wick tubes', 'Argand lamps', 'Kerosene lamps'. Among the many details of various fuels appear quaint recipes, one of which demands rusty nails as an ingredient! The last third of the book is devoted to the Candle group, including rushlights and tapers.

It is copiously illustrated—97 plates and numerous sketches—and reading the text one needs to make constant reference to the illustrations, which are most important in a work of this sort. Unfortunately, these have three limitations. Because of the make-up of the book, in most cases the relevant picture is many pages away and has to be searched for; in several instances the scale is so small that detail is obscure; and the quality of the photographs varies considerably.

Despite this, the volume has outstanding merit as a reference, and a glossary at the end, well illustrated by pen sketches, is particularly helpful. It should be welcomed by collectors and those who have an interest in antiques, and is of obvious value to students of lighting; but is also quite readable by a much wider public who have an interest beyond things which concern them immediately.

D. W. DURRANT

SHORT NOTES ON OTHER BOOKS

HAWTHORNE ON PAINTING. *Collected by Mrs. Charles W. Hawthorne.* New York, Dover Publications, 1960. One dollar

Charles W. Hawthorne (1872-1930) was the founder and for 31 years Principal of the Cape Cod School of Art, and this selection from his teachings, originally put together from students' notes in 1938, is now reissued in durable paper-back form.

THE STYLES OF ORNAMENT. *By Alexander Speltz.* New York, Dover Publications, 1959. \$2.98

First published in Germany in 1904 and since revised, this work now contains 400 plates illustrating forms of ornamentation in architecture and the applied arts from pre-historic times through different cultures of the civilized world until the middle of the nineteenth century, arranged in chronological sequence. There are notes on each plate, a good index and a list of reference books.

A HANDBOOK OF PLANT AND FLORAL ORNAMENT. *By Richard G. Hatton.* New York, Dover Publications, 1960. \$2.98

Originally entitled *The Craftsman's Plant-Book* and published in 1909, this illustrates some 1,200 plant-drawings taken from sixteenth- and seventeenth-century herbals. The plants are classified according to botanical groups. There is an introductory text.

ILLUSTRATING MEDICINE AND SURGERY. *By Margaret C. McClarty. With a foreword by Sir Robert Macintosh.* Edinburgh, E. & S. Livingstone, 1960. 37s 6d net

The author, who is Artist of the United Oxford Hospitals, has here drawn on her own skill and experience 'to set down some fundamental procedures for the making of drawings, paintings and the preparation of charts, etc. for general medical illustrating'. The book should be valuable to authors and to teachers of medicine and surgery. With 178 illustrations, a glossary of terms and a good index.

LIBRARY ADDITIONS

Fellows and Associates are reminded that they may borrow up to five books at a time from the Library and retain them for a month. Members living outside London may borrow books by post. Books sent by post are despatched at the cost of the Society and returned at the cost of the borrower. Books marked with an asterisk are part of the reference library, and not normally available for loan.

INDUSTRIAL AND COMMERCIAL ART AND DESIGN

BLACK, MISHA—Public interiors: an international survey. *London, Batsford, 1960.*

DE NAVARRO, ANTONIO—Causeries on English pewter. *London, G. Newnes [1910].*

DUTCH textiles, in collaboration with 'International Textiles', of Amsterdam. *Leigh-on-Sea (Ex.), F. Lewis, 1960.* Presented by Lord Nathan.

HARRIS, JOHN (*compiler*)—English decorative ironwork from contemporary source books, 1610-1836: a collection of drawings and pattern books. *London, Tiranti, 1960.* '[Compiled from] A new booke of drawing, by John Tijou, 1693—A new book of iron work, by J. Jores, 1756—The smith's right hand, by W. and J. Welldon, 1765—Ornamental iron work, by I. and J. Taylor, c. 1795—A book of designs, by J. Bottomley, 1793, etc.'

INCE, WILLIAM, and MAYHEW, JOHN—The universal system of household furniture: consisting of above 300 designs in the most elegant taste, both useful and ornamental, finely engraved, in which the nature of ornament and perspective is accurately exemplified; the whole made convenient to the nobility and gentry, in their choice, and comprehensive to the workman, by directions for executing the several designs, with specimens of ornament for young practitioners in drawing. A complete reprint with a preface by Ralph Edwards. *London, Tiranti, 1960.* (*Master hands series.*) Presented by the publisher.

INTERNATIONAL POSTER ANNUAL. *Teufen (Switzerland), Niggli. London, Tiranti, 1960.*

KOHLER, ELSIE DAY—Flower embroidery. *London, Vista Books, 1960.* Presented by the author.

LISTER, RAYMOND—Decorative cast ironwork in Great Britain; illustrated by the author. *London, Bell, 1960.*

PHOTO-LETTERING, INC.—Alphabet thesaurus: a treasury of letter designs. *New York, Reinhold; London, Chapman & Hall, 1960.*

STALKER, JOHN, and PARKER, GEORGE—A treatise of japanning and varnishing, 1688: with an introduction by H. D. Molesworth. *London, Tiranti, 1960.*

VICTORIA AND ALBERT MUSEUM, LONDON—Catalogue of a loan exhibition of English chintz: English printed furnishing fabrics from their origins until the present day, Victoria and Albert Museum, London, 18th May to 17th July, 1960. *London, H.M.S.O., 1960.*

WATNEY, BERNARD—Longton Hall porcelain. *London, Faber, 1957.* (*Monographs on pottery and porcelain, edited by W. B. Honey and Arthur Lane.*) Presented by the author.

WHISTLER, LAURENCE—Engraved glass, 1952-58. *London, Hart-Davis, 1959.*

COSTUME

GIBBS-SMITH, CHARLES HARVARD—The fashionable lady in the nineteenth century. *London, H.M.S.O., 1960.* (*Victoria and Albert Museum, London. Publications.*)

FROM THE JOURNAL OF 1861

VOLUME IX 23rd August

EXCURSION TO THE CRYSTAL PALACE

[At the June, 1861, Conference of the Society and the Institutions in Union it had been decided that arrangements should be made for a great summer gathering of excursion parties from the different Institutions at the Crystal Palace, with the intention that this should become an annual event sponsored by the Society. Over 8,000 people attended on this first occasion.]

The following are the arrangements for the Excursion to the Crystal Palace, Tuesday next, August 27:—

The doors of the Palace will be opened at ten a.m.

At 12.30 p.m.—The full orchestral band of the Crystal Palace Company, in the Concert-room adjoining the Centre Transept.

2 p.m.—Great Handel Festival organ performance.

3 p.m.—Mr. B. Waterhouse Hawkins has kindly undertaken to deliver a lecture on the 'Gorilla and other Monkeys contrasted with Man',* in the Lecture Theatre of the School of Science, Art, and Literature.

4 p.m.—Display of the Great Fountains and entire series of Waterworks.

5 p.m.—The Full Orchestral Band of the Company.

Grand Poultry Show throughout the day.

The following departments devoted to Industrial Science and Art will be found particularly interesting to Members of Mechanics' Institutions:—

The Industrial Museum situated in the gallery of the central transept, containing the agricultural and technological collections. These comprise specimens of all the farm products cultivated in Britain, and of raw products used in the arts and manufactures, with illustrations of the processes involved in their preparation; building stones, coals, and other minerals from British mines, foreign woods, &c.

The Tasmanian Court.

The collections illustrating 'The Customs and Products of Modern Egypt'.

The products of Greece, recently presented by the Greek Government.

The illustrated collection of British birds' eggs.

A collection of flint implements found in the drift, and specimens of stone weapons now in use among various tribes.

N.B. These five interesting collections are at the further end of the Tropical Department.

The Indian and Chinese collections, and the Naval Museum and Engineering Models, in the Gallery at the tropical end of the Palace.

The Picture Gallery containing amongst other works a collection of copies of the Queen's private pictures.

At the basement of the building the whole of the various processes connected with the Cotton Manufactures will be in full operation during the day.

Arrangements are provided in the ground for cricket, archery, quoits, gymnastics, boating, &c.

* We learn subsequently that this was illustrated 'by rapid and able sketches on the blackboard'. Ed.

